

This document gives pertinent information concerning the reissuance of the VPDES Permit listed below. This permit is being processed as a Minor, Municipal permit. The discharge results from the operation of a 0.0053 MGD wastewater treatment plant. This permit action consists of updating the proposed effluent limits to reflect the current Virginia Water Quality Standards (effective January 6, 2011) and updating permit language as appropriate. The effluent limitations and special conditions contained in this permit will maintain the Water Quality Standards of 9VAC25-260 et seq.

1. Facility Name and Mailing Address: Berkeley Elementary School
8020 River Stone Drive
Fredericksburg, VA 22407

SIC Code : 4952 WWTP

Facility Location: 5979 Partlow Road
Spotsylvania, VA 22553
County: Spotsylvania

Facility Contact Name: Doug Crooks
Facility Title: Division Director WWTP
Telephone Number: 540-507-7362
Facility E-mail Address: dcrooks@spotsylvania.va.us
2. Permit No.: VA0061301
Expiration Date of previous permit: June 4, 2012
Other VPDES Permits associated with this facility: N/A
Other Permits associated with this facility: N/A
E2/E3/E4 Status: N/A
3. Owner Name: Spotsylvania County School Board
Owner Contact/Title: S. Scott Baker, Superintendent
Telephone Number: 540-834-2500
Owner E-mail Address: sbaker@scs.k.12.va.us
4. Application Complete Date: December 21, 2011
Permit Drafted By: Joan C. Crowther
Date Drafted: 9/4/12
Draft Permit Reviewed By: Alison Thompson
Date Reviewed: 9/7/12
WPM Review By: Bryant Thomas
Date Reviewed: N/A
Public Comment Period : Start Date: September 28, 2012 End Date: October 29, 2012
5. Receiving Waters Information: See Attachment 1 for the Flow Frequency Determination
Receiving Stream Name : Mat River, UT
Stream Code: 8-XDP
Drainage Area at Outfall: 0.05 sq.mi.
River Mile: 1.06
Stream Basin: York River
Subbasin: None
Section: 3
Stream Class: III
Special Standards: None
Waterbody ID: VAN-F18R
7Q10 Low Flow: 0.0 MGD
7Q10 High Flow: 0.0 MGD
1Q10 Low Flow: 0.0 MGD
1Q10 High Flow: 0.0 MGD
30Q10 Low Flow: 0.0 MGD
30Q10 High Flow: 0.0 MGD
Harmonic Mean Flow: 0.0 MGD
30Q5 Flow: 0.0 MGD
6. Statutory or Regulatory Basis for Special Conditions and Effluent Limitations:

<input checked="" type="checkbox"/> State Water Control Law	<input type="checkbox"/> EPA Guidelines
<input checked="" type="checkbox"/> Clean Water Act	<input checked="" type="checkbox"/> Water Quality Standards
<input checked="" type="checkbox"/> VPDES Permit Regulation	<input type="checkbox"/> Other
<input checked="" type="checkbox"/> EPA NPDES Regulation	

7. Licensed Operator Requirements: Class III

8. Reliability Class: Class II

9. Permit Characterization:

<input type="checkbox"/> Private	<input type="checkbox"/> Effluent Limited	<input type="checkbox"/> Possible Interstate Effect
<input type="checkbox"/> Federal	<input checked="" type="checkbox"/> Water Quality Limited	<input type="checkbox"/> Compliance Schedule Required
<input type="checkbox"/> State	<input type="checkbox"/> Toxics Monitoring Program Required	<input type="checkbox"/> Interim Limits in Permit
<input checked="" type="checkbox"/> POTW	<input type="checkbox"/> Pretreatment Program Required	<input type="checkbox"/> Interim Limits in Other Document
<input type="checkbox"/> TMDL		

10. Wastewater Sources and Treatment Description:

This facility currently serves one elementary school with a current population size of 375 students. The wastewater treatment plant consists of a grease trap, three septic tanks, bar screen, aeration basin, secondary clarifier, chlorination (soda ash is added here every few days for pH control), dechlorination, and cascade aeration. Outfall 001 is located approximately 350 feet south of the facility on an unnamed tributary of the Mat River (38°07'7"/77°36'52").

Because this facility treats the wastewater from a school, the discharge has been determined to be a periodic discharge. A "periodic discharge" is one that happens regularly, but is not continuous all year.

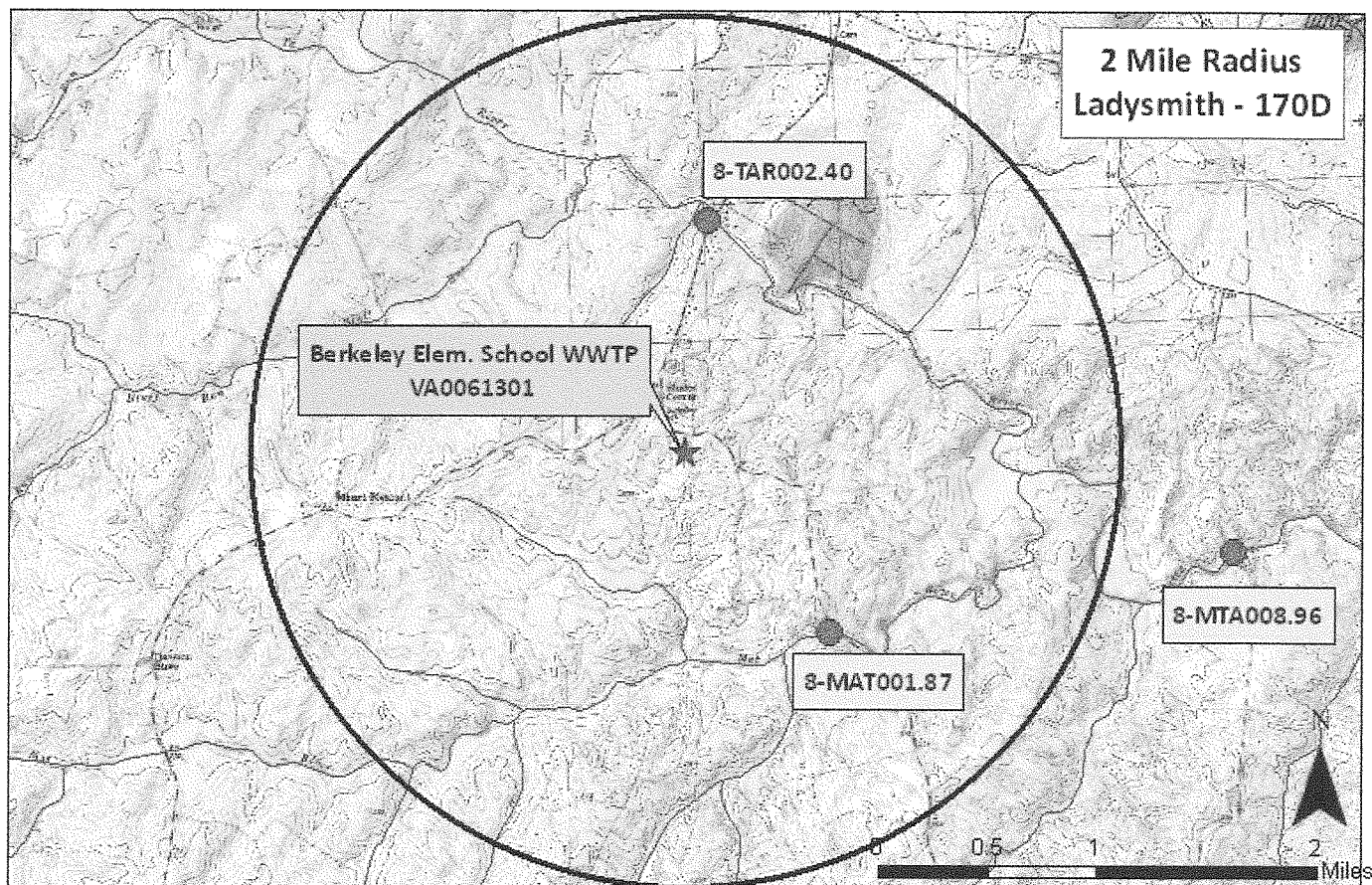
See Attachment 2 for a facility schematic/diagram.

TABLE 1 – Outfall Description

Outfall Number	Discharge Sources	Treatment	Design Flow(s)	Outfall Latitude and Longitude
001	Domestic Wastewater	See Item 10 above.	0.0053 MGD	38°07'7" N 77°36'52" W

The rest of this page is intentionally left blank.

USGS Topographic Map name – Ladysmith, DEQ Quad # 170D

**11. Sludge Treatment and Disposal Methods:**

The waste activated sludge is trucked to the Spotsylvania County's Massaponax Wastewater Treatment Plant (VA0025658) for final processing.

12. DEQ Monitoring Stations in Vicinity of Discharge:

TABLE 2 DEQ Ambient Water Quality Monitoring Station within 2 mile radius of Berkeley Elementary	
DEQ AWQM Station No.	Description
8-MAT001.87	Located at the Route 647 Bridge crossing, approximately 1.86 miles downstream of Outfall 001
8-TAR002.40	Located on the Ta River at the Route 738 (Partlow Road) Bridge crossing. This ambient station is located on a separate stream that is not associated with the outfall but is located within the 2-mile radius of the outfall.

13. Material Storage:

TABLE 3 - Material Storage		
Materials Description	Volume Stored	Spill/Stormwater Prevention Measures
Chlorination Tablets	1 – 5 gallon bucket	Inside locked storage building within fenced area.
Dechlorination Tablets	1 – 5 gallon bucket	Inside locked storage building within fenced area.
Soda Ash	1 – 30 gal. trash can	Inside locked storage building within fenced area.

14. Site Inspection:

Performed by Ms. Wilamena Harback on May 15, 2008. (See Attachment 3).

15. Receiving Stream Water Quality and Water Quality Standards:a) Ambient Water Quality Data

This facility discharges into an unnamed tributary to the Mat River. The nearest downstream DEQ monitoring station is 8-MAT001.87 on the Mat River, located at the Route 647 Bridge crossing (Blaydes Corner Road), approximately 1.86 miles downstream of Outfall 001. The following is the water quality summary for this segment of the Mat River, as taken from the Draft 2012 Integrated Assessment*:

The aquatic life and recreation uses are fully supporting. The wildlife and fish consumption uses were not assessed.

b) 303(d) Listed Stream Segments and Total Maximum Daily Loads (TMDLs)

Impairment Information in the Draft 2012 Integrated Report*							
Waterbody Name	Impaired Use	Cause	Distance From Outfall	TMDL completed	WLA	Basis for WLA	TMDL Schedule
Matta River	Aquatic Life	Benthic Macroinvertebrates	4.0 miles	No	N/A	N/A	2020
	Recreation	<i>E. coli</i>	5.2 miles	No	N/A	N/A	2016

**The Draft 2012 Integrated Report (IR) has been through the public comment period and reviewed by EPA. The 2012 IR is currently being finalized and prepared for release.*

The full planning statement dated August 29, 2012 is found in Attachment 4.

c) Receiving Stream Water Quality Criteria

Part IX of 9VAC25-260(360-550) designates classes and special standards applicable to defined Virginia river basins and sections. The receiving stream unnamed tributary to the Mat River is located within Section 3 of the York River Basin, and classified as a Class III water.

At all times, Class III waters must achieve a dissolved oxygen (D.O.) of 4.0 mg/L or greater, a daily average D.O. of 5.0 mg/L or greater, a temperature that does not exceed 32°C, and maintain a pH of 6.0-9.0 standard units (S.U.).

The Freshwater Water Quality Criteria/Wasteload Allocation Analysis dated August 29, 2012 (Attachment 5) details water quality criteria applicable to the receiving stream. The 90th percentile pH and temperature data from January 2009 to July 2012 was used to establish the applicable water quality criteria for the receiving stream can be found in Attachment 6.

Ammonia:

The 7Q10 and 1Q10 of the receiving stream are 0.0 MGD. In cases such as this, effluent pH and temperature data may be used to establish the ammonia water quality standard. Because this discharge is “periodic” only the acute criteria applies to this discharge.

Staff has re-evaluated the effluent data for pH and temperature and finds that there was significant difference in the pH and temperature data from the data used to establish ammonia criteria and subsequent effluent limits in the previous permit. For this permit reissuance, effluent pH and temperature from January 2009 to July 2012 was reviewed. The 90th percentile value for pH and temperature was 7.68 SU and 22.2°C, respectively. The resulting ammonia water quality criteria using these pH and temperature values are 14.9 mg/L for acute and 2.23 mg/L for chronic.

The previous two permit reissuances used 90th percentile pH value of 8.3 SU and 90th percentile temperature value of 20°C to calculate the ammonia criteria. The resulting acute ammonia water quality criteria using these values was 2.92 mg/L. This effluent pH and temperature data can be found in Attachment 7.

Metals Criteria:

The Water Quality Criteria for some metals are dependent on the receiving stream's hardness (expressed as mg/L calcium carbonate). There is no hardness data for this facility. Staff guidance suggests using a default hardness value of 50 mg/L CaCO₃ for streams east of the Blue Ridge. The hardness-dependent metals criteria in Attachment 5 are based on this default value.

d) Receiving Stream Special Standards

The State Water Control Board's Water Quality Standards, River Basin Section Tables (9VAC25-260-360, 370 and 380) designates the river basins, sections, classes, and special standards for surface waters of the Commonwealth of Virginia. The receiving stream, Mat River, UT, is located within Section 3 of the York River Basin. There are no special standards designed for this section.

e) Threatened or Endangered Species

The Virginia DGIF Fish and Wildlife Information System Database was searched on August 22, 2012 for records to determine if there are threatened or endangered species in the vicinity of the discharge. No threatened or endangered species were identified. See Attachment 8.

16. Antidegradation (9VAC25-260-30):

All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The receiving stream has been classified as Tier 1. The critical flows for the stream are zero and at times the stream flow is comprised of only effluent. It is staff's best professional judgment that such streams are Tier 1. Permit limits proposed have been established by determining wasteload allocations which will result in attaining and/or maintaining all water quality criteria which apply to the receiving stream, including narrative criteria. These wasteload allocations will provide for the protection and maintenance of all existing uses.

17. Effluent Screening, Wasteload Allocation, and Effluent Limitation Development:

To determine water quality-based effluent limitations for a discharge, the suitability of data must first be determined. Data is suitable for analysis if one or more representative data points is equal to or above the quantification level ("QL") and the data represent the exact pollutant being evaluated.

Next, the appropriate Water Quality Standards (WQS) are determined for the pollutants in the effluent. Then, the Wasteload Allocations (WLA) are calculated. In this case since the critical flows 7Q10 and 1Q10 have been determined to be zero, the WLA's are equal to the WQS. The WLA values are then compared with available effluent data to determine the need for effluent limitations. Effluent limitations are needed if the 97th percentile of the daily effluent concentration values is greater than the acute wasteload allocation or if the 97th percentile of the four-day average effluent concentration values is greater than the chronic wasteload allocation. Effluent limitations are based on the most limiting WLA, the required sampling frequency, and statistical characteristics of the effluent data.

a) Effluent Screening:

Effluent data obtained from DMR for the period of January 2007 through July 2012 has been reviewed and determined to be suitable for evaluation. There have been no exceedances of the established limitations during this time period.

The following pollutants require a wasteload allocation analysis: Total Residual Chlorine and Ammonia as N.

b) Mixing Zones and Wasteload Allocations (WLAs):

Wasteload allocations (WLAs) are calculated for those parameters in the effluent with the reasonable potential to cause an exceedance of water quality criteria. The basic calculation for establishing a WLA is the steady state complete mix equation:

$$WLA = \frac{C_o [Q_e + (f)(Q_s)] - [(C_s)(f)(Q_s)]}{Q_e}$$

Where:	WLA	= Wasteload allocation
	C _o	= In-stream water quality criteria
	Q _e	= Design flow
	f	= Decimal fraction of critical flow from mixing evaluation
	Q _s	= Critical receiving stream flow (1Q10 for acute aquatic life criteria; 7Q10 for chronic aquatic life criteria; 30Q10 for ammonia criteria; harmonic mean for carcinogen-human health criteria; and 30Q5 for non-carcinogen human health criteria)
	C _s	= Mean background concentration of parameter in the receiving stream.

The water segment receiving the discharge via Outfall 001 is considered to have a 7Q10 and 1Q10 of 0.0 MGD. As such, there is no mixing zone and the WLA is equal to the C_o.

c) Effluent Limitations Toxic Pollutants, Outfall 001 –

9VAC25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Those parameters with WLAs that are near effluent concentrations are evaluated for limits.

The VPDES Permit Regulation at 9VAC25-31-230.D requires that monthly and weekly average limitations be imposed for continuous discharges from POTWs and monthly average and daily maximum limitations be imposed for all other continuous non-POTW discharges.

1) Ammonia as N:

Staff reevaluated pH and temperature and has concluded that the pH and temperature data was significantly different than what was used previously to derive ammonia criteria. The resulting ammonia water quality acute criteria using this data was 14.9 mg/L which is less stringent than what was previously calculated and used in the past two permit reissuances. Documentation for ammonia analysis can be found in Attachment 9.

Because the facility was designed to meet an ammonia effluent limitation of 1.7 mg/L (See Attachment 10 – CTO dated September 28, 2000), has had no ammonia effluent limit violations in the past 5 years of data review, and there is no basis for backsliding the ammonia limitation, the existing ammonia effluent limitation of 2.9 mg/L that was established in the 2002 permit reissuance will be carried forward for this permit reissuance. Documentation supporting this ammonia effluent limitation can be found in Attachment 11.

At the time of 2002 analysis of ammonia, DEQ guidance suggests using a sole data point of 10.0 mg/L for discharges containing domestic sewage to ensure the evaluation adequately addresses the potential for ammonia to be present in the discharge containing domestic sewage.

2) Total Residual Chlorine:

Chlorine is used for disinfection and is potentially in the discharge. Staff calculated WLAs for TRC using current critical flows and the mixing allowance. In accordance with current DEQ guidance, staff used a default data point of 0.2 mg/L and the calculated WLAs to derive limits. A monthly average of 0.009 mg/L and a weekly average limit of 0.012 mg/L are proposed for this discharge (see Attachment 12).

3) Metals/Organics:

No metals or organics data were available for review; therefore, no effluent limits are proposed.

d) Effluent Limitations and Monitoring, Outfall 001 – Conventional and Non-Conventional Pollutants

No changes to dissolved oxygen (D.O.), biochemical oxygen demand-5 day (BOD₅), total suspended solids (TSS), ammonia, and pH limitations are proposed.

Dissolved Oxygen and BOD₅ limitations are based on the stream modeling conducted in January 5, 1977, (Attachment 13) and are set to meet the water quality criteria for D.O. in the receiving stream. .

It is staff's practice to equate the Total Suspended Solids limits with the BOD₅ limits. TSS limits are established to equal BOD₅ limits since the two pollutants are closely related in terms of treatment of domestic sewage.

pH limitations are set at the water quality criteria.

e) Effluent Limitations and Monitoring Summary.

The effluent limitations are presented in the following table. Limits were established for Flow, BOD₅, Total Suspended Solids, Ammonia as N, pH, Dissolved Oxygen, and Total Residual Chlorine.

The limit for Total Suspended Solids is based on Best Professional Judgement.

The mass loading (kg/d) for monthly and weekly averages were calculated by multiplying the concentration values (mg/L), with the flow values (in MGD) and a conversion factor of 3.785.

Sample Type and Frequency are in accordance with the recommendations in the VPDES Permit Manual.

The VPDES Permit Regulation at 9VAC25-31-30 and 40 CFR Part 133 require that the facility achieve at least 85% removal for BOD and TSS (or 65% for equivalent to secondary). The limits in this permit are water-quality-based effluent limits and result in greater than 85% removal.

18. Antibacksliding:

All limits in this permit are at least as stringent as those previously established. Backsliding does not apply to this reissuance.

19. Effluent Limitations/Monitoring Requirements:

Design flow is 0.0053 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS						MONITORING REQUIREMENTS	
		<u>Monthly Average</u>		<u>Weekly Average</u>		<u>Minimum</u>	<u>Maximum</u>	<u>Frequency</u>	<u>Sample Type</u>
Flow (MGD)	NA	NL		NA		NA	NL	1/D	Estimate
pH	3	NA		NA		6.0 S.U.	9.0 S.U.	1/D	Grab
BOD ₅	3, 5	24 mg/L	0.48 kg/day	36 mg/L	0.72 kg/day	NA	NA	1/M	Grab
Total Suspended Solids (TSS)	2	24 mg/L	0.48 kg/day	36 mg/L	0.72 kg/day	NA	NA	1/M	Grab
Dissolved Oxygen (DO)	3, 5	NA		NA		5.5 mg/L	NA	1/D	Grab
Ammonia, as N	3, 5	2.9 mg/L		2.9 mg/L		NA	NA	1/M	Grab
Total Residual Chlorine (after contact tank)	2, 3, 4	NA		NA		1.0 mg/L	NA	1/D	Grab
Total Residual Chlorine (after dechlorination)	3	0.009 mg/L		0.012 mg/L		NA	NA	1/D	Grab

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgement
3. Water Quality Standards
4. DEQ Disinfection Guidance
5. Stream Model- Attachment 13.

MGD = Million gallons per day.

NA = Not applicable.

NL = No limit; monitor and report.

S.U. = Standard units.

1/D = Once every day.

1/M = Once every month.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

20. Other Permit Requirements:

- a) Part I.B. of the permit contains additional chlorine monitoring requirements, quantification levels and compliance reporting instructions.

These additional chlorine requirements are necessary per the Sewage Collection and Treatment Regulations at 9VAC25-70 and by the Water Quality Standards at 9VAC25-260-170. A minimum chlorine residual must be maintained at the exit of the chlorine contact tank to assure adequate disinfection. No more than 10% of the monthly test results for TRC at the exit of the chlorine contact tank shall be <1.0 mg/L with any TRC <0.6 mg/L considered a system failure. Monitoring at numerous STPs has concluded that a TRC residual of 1.0 mg/L is an adequate indicator of compliance with the *E. coli* criteria. *E. coli* limits are defined in this section as well as monitoring requirements to take effect should an alternate means of disinfection be used.

9VAC25-31-190.L.4.c. requires an arithmetic mean for measurement averaging and 9VAC25-31-220.D requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Specific analytical methodologies for toxics are listed in this permit section as well as quantification levels (QLs) necessary to demonstrate compliance with applicable permit limitations or for use in future evaluations to determine if the pollutant has reasonable potential to cause or contribute to a violation. Required averaging methodologies are also specified.

21. Other Special Conditions:

- a) 95% Capacity Reopener. The VPDES Permit Regulation at 9VAC25-31-200.B.4 requires all POTWs and PVOTWs develop and submit a plan of action to DEQ when the monthly average influent flow to their sewage treatment plant reaches 95% or more of the design capacity authorized in the permit for each month of any three consecutive month period. This facility is a POTW.
- b) O&M Manual Requirement. Required by Code of Virginia §62.1-44.19; Sewage Collection and Treatment Regulations, 9VAC25-790; VPDES Permit Regulation, 9VAC25-31-190.E. The permittee shall maintain a current Operations and Maintenance (O&M) Manual. The permittee shall operate the treatment works in accordance with the O&M Manual and shall make the O&M Manual available to Department personnel for review upon request. Any changes in the practices and procedures followed by the permittee shall be documented in the O&M Manual within 90 days of the effective date of the changes. Non-compliance with the O&M Manual shall be deemed a violation of the permit.
- c) CTC, CTO Requirement. The Code of Virginia § 62.1-44.19; Sewage Collection and Treatment Regulations, 9VAC25-790 requires that all treatment works treating wastewater obtain a Certificate to Construct prior to commencing construction and to obtain a Certificate to Operate prior to commencing operation of the treatment works.
- d) Licensed Operator Requirement. The Code of Virginia at §54.1-2300 et seq. and the VPDES Permit Regulation at 9VAC25-31-200 C, and Rules and Regulations for Waterworks and Wastewater Works Operators (18VAC160-20-10 et seq.) requires licensure of operators. This facility requires a Class III operator.
- e) Reliability Class. The Sewage Collection and Treatment Regulations at 9VAC25-790 require sewage treatment works to achieve a certain level of reliability in order to protect water quality and public health consequences in the event of component or system failure. Reliability means a measure of the ability of the treatment works to perform its designated function without failure or interruption of service. The facility is required to meet a Reliability Class of II.
- f) Sludge Reopener. The VPDES Permit Regulation at 9VAC25-31-220.C. requires all permits issued to treatment works treating domestic sewage (including sludge-only facilities) include a reopener clause allowing incorporation of any applicable standard for sewage sludge use or disposal promulgated under Section 405(d) of the CWA. The facility includes a sewage treatment works.
- g) Sludge Use and Disposal. The VPDES Permit Regulation at 9VAC25-31-100.P; 220.B.2., and 420 through 720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on their sludge use and disposal practices and to meet specified standards for sludge use and disposal. The facility includes a treatment works treating domestic sewage.
- h) TMDL Reopener: This special condition is to allow the permit to be reopened if necessary to bring it in compliance with any applicable TMDL that may be developed and approved for the receiving stream.

Permit Section Part II. Part II of the permit contains standard conditions that appear in all VPDES Permits. In general, these standard conditions address the responsibilities of the permittee, reporting requirements, testing procedures and records retention.

22. Changes to the Permit from the Previously Issued Permit:

- a) Special Conditions:
 - 1) Indirect Dischargers Special Condition was removed since this facility serves only a school. There is no other wastewater source.
- b) Monitoring and Effluent Limitations: None

23. Variances/Alternate Limits or Conditions:

There are no variances/alternate limits or conditions contained in this permit.

24. Public Notice Information:

First Public Notice Date: September 28, 2012 Second Public Notice Date: October 5, 2012

Public Notice Information is required by 9VAC25-31-280 B. All pertinent information is on file and may be inspected, and copied by contacting the: DEQ Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193, Telephone No. (703) 583-3925, joan.crowther@deq.virginia.gov. See Attachment 14 for a copy of the public notice document.

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer and of all persons represented by the commenter/requester, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit. Requests for public hearings shall state 1) the reason why a hearing is requested; 2) a brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit; and 3) specific references, where possible, to terms and conditions of the permit with suggested revisions. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given. The public may request an electronic copy of the draft permit and fact sheet or review the draft permit and application at the DEQ Northern Regional Office by appointment.

25. Additional Comments:

Previous Board Action(s): None

Staff Comments: None

Public Comment: No comments were received.

EPA Checklist: The checklist can be found in Attachment 15.

VA0061301 Berkeley Elementary School Wastewater Treatment Plant
Fact Sheet Attachments

Attachment	Description
1	Flow Frequency Determination Memo dated January 31, 2002
2	Facility Schematic/Diagram
3	Site Inspection by DEQ Compliance Staff on May 15, 2008
4	DEQ Planning Statement dated August 29, 2012
5	Freshwater Water Quality Criteria/Wasteload Allocated Analysis dated August 29, 2012
6	pH and Temperature data January 2009 – July 2012
7	pH and Temperature data January 1999 – January 2002
8	DGIF Threatened and Endangered Species Database Search dated August 22, 2012
9	2012 Ammonia Analysis
10	September 28, 2000 CTO
11	2002 Ammonia Analysis
12	Total Residual Chlorine Analysis
13	January 5, 1977 Stream Model
14	Public Notice
15	EPA Checklist dated August 31, 2012

To: Paula D. Byrnes@WDBRG@DEQ
From: Paul E. Herman@WQA@DEQ
Cc:
Subject: Berkeley Elementary School STP - VA0061301
Attachment:
Date: 1/31/2002 4:28 PM

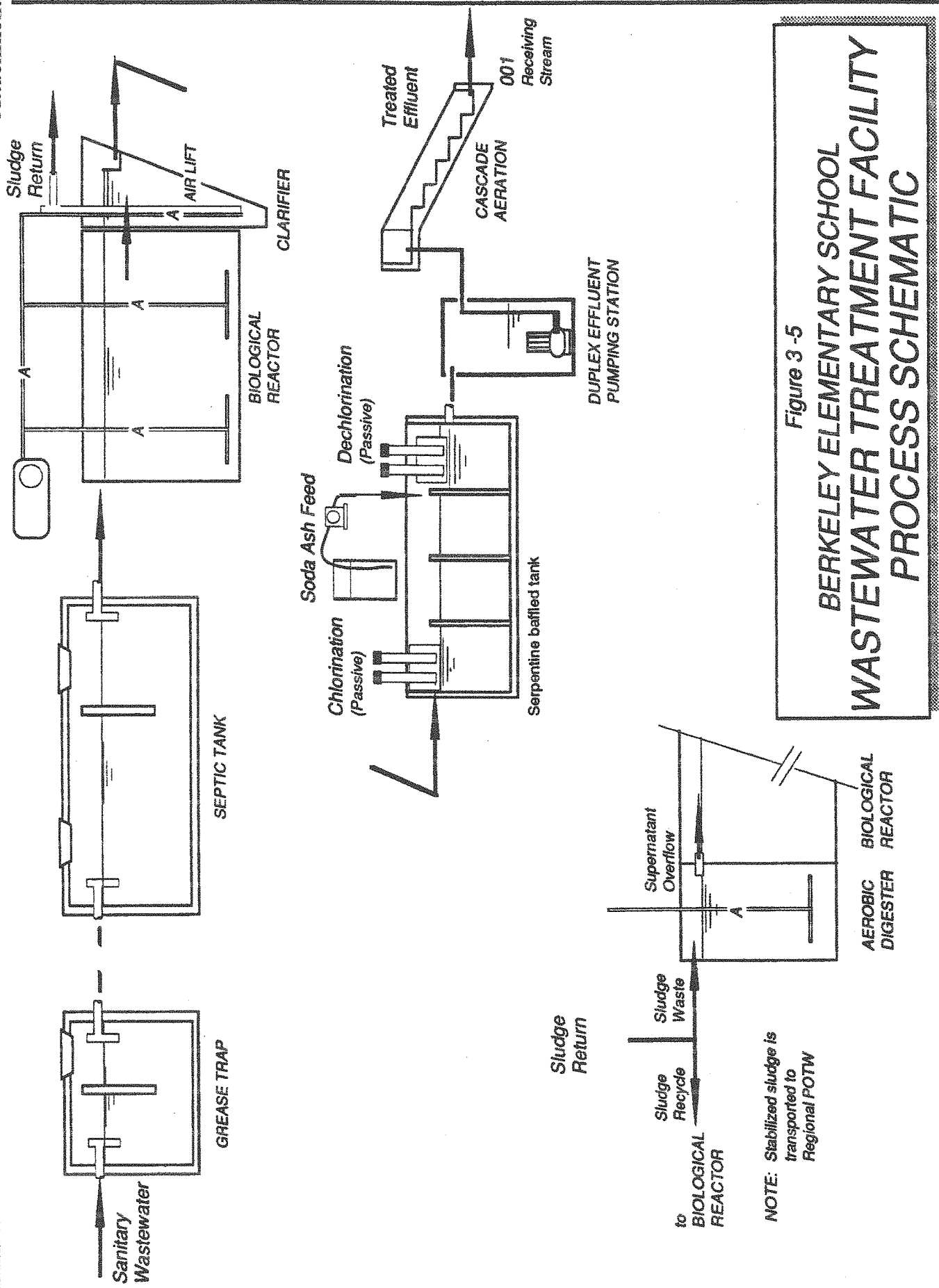
Paula,

The Berkeley Elementary School STP discharges to a dry ditch that drains to an intermittent tributary that feeds a small pond. The flow frequencies for dry ditches and intermittent streams are 0.0 cfs for the 1Q10, 7Q10, 30Q5, high flow 1Q10, high flow 7Q10, and harmonic mean.

The intermittent stream feeds into a small pond. Typically, during low flow periods, any flow into a pond is retained as storage. Therefore, retention times should be considered in order to determine the impact the STP discharge has on water quality in the pond.

Let me know if you need additional data or if you have any questions.

Paul E. Herman, P.E.
Surface Water Investigations
Dept. of Environmental Quality
(804) 698-4464





COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
NORTHERN REGIONAL OFFICE

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www.deq.virginia.gov

Preston Bryant
Secretary of Natural
Resources

David K. Paylor
Director

Thomas A. Faha
Regional Director

June 13, 2008

Dr. James A. Meyer
Spotsylvania County School Board
8020 Riverstone Drive
Fredericksburg, VA 22407

Re: Berkley Elementary School Sewage Treatment Plant Inspection, Permit VA0061301

Dear Dr. Meyer:

Enclosed are copies of the facility technical and laboratory inspection reports generated from observations made while performing a Facility Technical Inspection at Berkley Elementary School - Sewage Treatment Plant (STP) on May 15, 2008. The compliance staff would like to thank Mr. Stewart Robbins for his time and assistance during the inspection.

Summaries for both the technical and laboratory inspections are enclosed.

If you have any questions or comments concerning this report, please feel free to contact me at the Northern Regional Office at (703) 583-3909 or by E-mail at wgharback@deq.virginia.gov.

Sincerely,

A handwritten signature in cursive script that reads "Wilamena Harback".

Wilamena Harback
Environmental Specialist II

cc: Permits / DMR File
Compliance Manager
Compliance Auditor
Compliance Inspector
OWPC (Steve Stell)
Doug Crooks – Spotsylvania County

**DEQ
WASTEWATER FACILITY INSPECTION REPORT
PREFACE**

VPDES/State Certification No.	(RE) Issuance Date	Amendment Date	Expiration Date																								
VA0061301	06/05/07		06/04/12																								
Facility Name	Address		Telephone Number																								
Berkley Sewage Treatment Plant (STP)	5979 Partlow Road Spotsylvania, VA 22553		(540) 582-5141																								
Owner Name	Address		Telephone Number																								
Spotsylvania County Public Schools	8020 Riverstone Drive Fredericksburg, VA 22407		(540) 834-2500																								
Responsible Official	Title		Telephone Number																								
Dr. James A. Meyer	Assistant Superintendent		(540) 834-2500 Ext. 1000																								
Responsible Operator	Operator Cert. Class/number		Telephone Number																								
Mr. Harry Stewart Robbins	Class I / 1909-001268		(540) 582-3850																								
TYPE OF FACILITY:																											
<table border="1" style="width: 100%;"> <tr> <th colspan="4">DOMESTIC</th> <th colspan="4">INDUSTRIAL</th> </tr> <tr> <td>Federal</td> <td></td> <td>Major</td> <td></td> <td>Major</td> <td></td> <td>Primary</td> <td></td> </tr> <tr> <td>Non-federal</td> <td>X</td> <td>Minor</td> <td>X</td> <td>Minor</td> <td></td> <td>Secondary</td> <td></td> </tr> </table>				DOMESTIC				INDUSTRIAL				Federal		Major		Major		Primary		Non-federal	X	Minor	X	Minor		Secondary	
DOMESTIC				INDUSTRIAL																							
Federal		Major		Major		Primary																					
Non-federal	X	Minor	X	Minor		Secondary																					
INFLUENT CHARACTERISTICS:																											
		Flow	0.0053 MGD																								
		Population Served	<500																								
		Connections Served	1 - School																								
		BOD ₅	Unknown																								
		TSS	Unknown																								
EFFLUENT LIMITS: (mg/L unless specified)																											
Parameter	Min.	Avg.	Max.	Parameter	Min.	Avg.	Max.																				
Flow (MGD)		0.0053	NL	TSS		24	36																				
pH (SU)	6.0		9.0	BOD₅		24	36																				
DO	5.5			TRC Total Contact	1.0																						
E. Coli (n/CMLI)		126		TRC Inst Res Max		0.009	0.011																				
Ammonia		2.9	2.9	TRC Inst Tech Min	0.6																						
		Receiving Stream	Unnamed tributary to Mat River																								
		Basin	York River																								
		Discharge Point (LAT)	38° 07' 11.2" N																								
		Discharge Point (LONG)	77° 37' 06.5" W																								

REV 5/00

**DEQ
WASTEWATER FACILITY
INSPECTION REPORT
PART 1**

Inspection date: **May 15, 2008** Date form completed: **June 13, 2008**
 Inspection by: **Wilamena Harback** Inspection agency: **DEQ NRO**
 Time spent: **24 hrs** Announced: **Yes**
 Reviewed by: Scheduled: **Yes**
 Present at inspection: **Stewart Robbins – Spotsylvania County (Berkley Elementary School STP)**

TYPE OF FACILITY:

Domestic**Industrial**

☐ Federal ☐ Major
☒ Nonfederal ☒ Minor

☐ Major ☐ Primary
☐ Minor ☐ Secondary

Type of inspection:

☒ Routine
☐ Compliance/Assistance/Complaint
☐ Reinspection

Date of last inspection: **December 17, 2002**
 Agency: **DEQ NRO**

Population served: approx. **<500**Connections served: approx. **1**Last month average: (Influent): **Not Tested**Last month average: (Effluent) **April 2008:**

Flow:	0.0050	MGD	pH	6.8	S.U.	DO	7.5	mg/L
TSS	16.8	mg/L	BOD ₅	<QL	mg/L	Ammonia	<QL	mg/L
TRC, Inst Res Max	<QL	mg/L	TRC, Total Contact	0.9	mg/L	TRC, Inst Tech Min Limit	0.9	mg/L

DATA VERIFIED IN PREFACE

☐ Updated

☒ No changes

Has there been any new construction?

☐ Yes

☒ No

If yes, were plans and specifications approved?

☐ Yes

☐ No

☒ NA

DEQ approval date:

(A) PLANT OPERATION AND MAINTENANCE

1. Class and number of licensed operators: I 3 II 0 III 0 IV 0 Trainee 0
2. Hours per day plant is manned: **1.5-2.0 hours per day/ 7 days per week**
3. Describe adequacy of staffing. ☒ Good ☐ Average ☐ Poor
4. Does the plant have an established program for training personnel? ☒ Yes ☐ No
5. Describe the adequacy of the training program. ☒ Good ☐ Average ☐ Poor
6. Are preventive maintenance tasks scheduled? ☒ Yes ☐ No
7. Describe the adequacy of maintenance. ☒ Good ☐ Average ☐ Poor*
8. Does the plant experience any organic/hydraulic overloading? ☐ Yes ☒ No
If yes, identify cause and impact on plant:
9. Any bypassing since last inspection? ☐ Yes ☒ No
10. Is the standby electric generator operational? ☐ Yes ☐ No* ☒ NA
11. Is the STP alarm system operational? ☐ Yes ☐ No* ☒ NA
12. How often is the standby generator exercised? **NA**
Power Transfer Switch?
Alarm System?
13. When was the cross connection control device last tested on the potable water service? **NA**
14. Is sludge being disposed in accordance with the approved sludge disposal plan?
☒ Yes ☐ No ☐ NA
15. Is septage received by the facility? ☐ Yes ☒ No
Is septage loading controlled? ☐ Yes ☐ No
Are records maintained? ☐ Yes ☐ No
16. Overall appearance of facility: ☒ Good ☐ Average ☐ Poor

Comments:

1. **Weekend and holiday coverage is provided by the operations staff from the Thornburg STP (VA0029513).**
4. **VA Tech Short School, Activated Sludge classes, Process Control classes, Sacramento Book Series, etc.**
20. **Sludge is removed by a pump and haul septic service and is currently transported to the Massaponax WWTF (VA0025658) approximately twice per year.**

(B) PLANT RECORDS

1. Which of the following records does the plant maintain?

Operational Logs for each unit process	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Instrument maintenance and calibration	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Mechanical equipment maintenance	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Industrial waste contribution (Municipal Facilities)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> NA

2. What does the operational log contain?

<input checked="" type="checkbox"/> Visual observations	<input checked="" type="checkbox"/> Flow measurement
<input checked="" type="checkbox"/> Laboratory results	<input checked="" type="checkbox"/> Process adjustments
<input type="checkbox"/> Control calculations	<input type="checkbox"/> Other (specify)

Comments:

3. What do the mechanical equipment records contain?

<input checked="" type="checkbox"/> As built plans and specs	<input checked="" type="checkbox"/> Spare parts inventory
<input checked="" type="checkbox"/> Manufacturers instructions	<input checked="" type="checkbox"/> Equipment/parts suppliers
<input type="checkbox"/> Lubrication schedules	<input type="checkbox"/> Other (specify)

Comments: **Records are kept at the Spotsylvania County High School STP and were not observed during the inspection.**

4. What do the industrial waste contribution records contain?
-
- (Municipal Only)

<input type="checkbox"/> Waste characteristics	<input type="checkbox"/> Locations and discharge types
<input type="checkbox"/> Impact on plant	<input type="checkbox"/> Other (specify)

Comments: **NA**

5. Which of the following records are kept at the plant and available to personnel?

<input checked="" type="checkbox"/> Equipment maintenance records	<input checked="" type="checkbox"/> Operational Log
<input type="checkbox"/> Industrial contributor records	<input checked="" type="checkbox"/> Instrumentation records
<input checked="" type="checkbox"/> Sampling and testing records	

6. Records not normally available to plant personnel and their location:
- None**

7. Were the records reviewed during the inspection? ☒ Yes ☐ No
8. Are the records adequate and the O & M Manual current? ☒ Yes ☐ No
9. Are the records maintained for the required 3-year time period? ☒ Yes ☐ No

Comments:

(C) SAMPLING

1. Do sampling locations appear to be capable of providing representative samples? ☒ Yes ☐ No*
2. Do sample types correspond to those required by the VPDES permit? ☒ Yes ☐ No*
3. Do sampling frequencies correspond to those required by the VPDES permit? ☒ Yes ☐ No*
4. Are composite samples collected in proportion to flow? ☐ Yes ☐ No* ☒ NA
5. Are composite samples refrigerated during collection? ☐ Yes ☐ No* ☒ NA
6. Does plant maintain required records of sampling? ☒ Yes ☐ No*
7. Does plant run operational control tests? ☒ Yes ☐ No

Comments:

(D) TESTING

1. Who performs the testing? ☒ Plant ☐ Central Lab ☒ Commercial Lab

Name: **Facility – Chlorine, DO, and pH**
Massaponax Central Lab – TSS, BOD₅, and Ammonia

If plant performs any testing, complete 2-4.

2. What method is used for chlorine analysis? **Hach DPD Pocket Colorimeter**
3. Does plant appear to have sufficient equipment to perform required tests? ☒ Yes ☐ No*
 4. Does testing equipment appear to be clean and/or operable? ☒ Yes ☐ No*

Comments:

(E) FOR INDUSTRIAL FACILITIES WITH TECHNOLOGY BASED LIMITS ONLY

1. Is the production process as described in the permit application? (If no, describe changes in comments)
☐ Yes ☐ No ☒ NA
2. Do products and production rates correspond as provided in the permit application? (If no, list differences)
☐ Yes ☐ No ☒ NA
3. Has the State been notified of the changes and their impact on plant effluent? Date:
☐ Yes ☐ No* ☒ NA

Comments:

Wastewater Treatment Description:

This facility is a sewage treatment plant which currently serves one (1) elementary school with a current enrollment of approximately 350 students and owned by the Spotsylvania County School Board. The treatment system has a current a design flow of 0.0053 MGD.

The current system is a small package plant which consists of a bar screen, an aeration basin (activated sludge with extended aeration), a secondary clarifier, and a small aerobic sludge digester. The abandoned sand filters noted during the March 2002 site inspection were demolished and removed in 2005 during construction of an addition to the school.

Flow is received from the school via a grease trap and three septic tanks. From the septic tanks, wastewater then gravity flows directly to the treatment system. Influent then enters the treatment system through the bar screen to catch large debris and then to the aeration basin. Following aeration, effluent enters the secondary clarifier before flowing to the chlorine contact tank. Soda Ash is added every few days for pH control except during the summer months when school is out.

Effluent enters the chlorine contact tank where it is disinfected using sodium hypochlorite tablets followed by dechlorination via sodium sulfite tablets. Following disinfection, effluent is re-aerated prior to discharge via a concrete cascade aerator. Samples are collected at the bottom of the cascade aerator, prior to discharge. Following post aeration, effluent is then discharged through Outfall 001, which is located approximately 350 feet south of the facility on an unnamed tributary of the Mat River (N38° 07' 11" / 77° W37' 06").

The facility is staffed daily for approximately 1- 1½ hours.

Sludge Treatment and Disposal Methods:

Sludge generated at the facility is pumped from the digester twice per year and hauled to the Massaponax WWTF (VA0025658) located in Spotsylvania County.

Material Storage:

Material Storage		
Materials Description	Volume Stored	Spill/Stormwater Prevention Measures
Chlorination Tablets	1 – 5 gallon buckets	Stored inside locked storage building, inside the locked fenced area.
Dechlorination Tablets	1 – gallon buckets	Stored inside locked storage building, inside the locked fenced area.
Soda Ash	1 – 30 gallon Trash Can	Stored inside locked storage building, inside the locked fenced area.

UNIT PROCESS: Screening/Comminution

- | | | | | |
|---|---------|--|---|--|
| 1. Number of Units: | Manual: | 1 | Mechanical: | 0 |
| Number in operation: | Manual: | 1 | Mechanical: | 0 |
| 2. Bypass channel provided: | | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No* | |
| Bypass channel in use: | | <input type="checkbox"/> Yes | <input type="checkbox"/> No | |
| 3. Area adequately ventilated: | | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No* | |
| 4. Alarm system for equipment failure or overloads: | | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No* | |
| 5. Proper flow distribution between units: | | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> NA |
| 6. How often are units checked and cleaned? | | Manually once per day | | |
| 7. Cycle of operation: | | Continuous | | |
| 8. Volume of screenings removed: | | <1 cubic Foot per week | | |
| 9. General condition: | | <input checked="" type="checkbox"/> Good | <input type="checkbox"/> Fair | <input type="checkbox"/> Poor |

Comments:

- **The facility has a low volume of screenings. The screenings that are removed from the bar screen are bagged up and combined with the Spotsylvania County High School screenings and taken to the Massaponax WWTF (VA0025658).**
-
-

UNIT PROCESS: Activated Sludge Aeration (Extended)

1. Number of units: **1** In operation: **1**
2. Mode of operation: **Continuous**
3. Proper flow distribution between units: ☐ Yes ☐ No* ☒ NA
4. Foam control operational: ☐ Yes ☐ No* ☒ NA
5. Scum control operational: ☐ Yes ☐ No* ☒ NA
6. Evidence of following problems:
- | | | |
|-----------------------------------|-------------------------------|--|
| a. dead spots | <input type="checkbox"/> Yes* | <input checked="" type="checkbox"/> No |
| b. excessive foam | <input type="checkbox"/> Yes* | <input checked="" type="checkbox"/> No |
| c. poor aeration | <input type="checkbox"/> Yes* | <input checked="" type="checkbox"/> No |
| d. excessive aeration | <input type="checkbox"/> Yes* | <input checked="" type="checkbox"/> No |
| e. excessive scum | <input type="checkbox"/> Yes* | <input checked="" type="checkbox"/> No |
| f. aeration equipment malfunction | <input type="checkbox"/> Yes* | <input checked="" type="checkbox"/> No |
| g. other (identify in comments) | <input type="checkbox"/> Yes* | <input checked="" type="checkbox"/> No |
7. Mixed liquor characteristics (as available): **Not collected at the time of inspection.**
8. Return/waste sludge:
- | | |
|--------------------------|---|
| a. Return Rate: | Not Measured |
| b. Waste Rate: | Not Measured |
| c. Frequency of Wasting: | Approximately once every two weeks (MLSS is the defining factor.). |
9. Aeration system control: ☒ Time Clock ☐ Manual ☐ Continuous ☐ Other (explain)
10. Effluent control devices working properly (oxidation ditches): ☐ Yes ☐ No* ☒ NA
11. General condition: ☒ Good ☐ Fair ☐ Poor

Comments:

- The facility adds soda ash daily made from the following mixture: 20 gallons of water to four 20 ounce scoops.
- The facility does add molasses into the aeration tank to serve as a nutrient/food supplement during the summer months when summer school is in session (with the lower flow, the microorganisms need additional food sources).
- This package plant does have a digester section; however, the facility has it pumped out and taken to the Massaponax WWTF (VA0025658) periodically. It does contain blowers that are cycled 30 minutes on and 30 minutes during the weekdays. The weekend cycle is slightly different.

UNIT PROCESS: Sedimentation[☒] Primary [☐] Secondary [☐] Tertiary

- | | | | | |
|--|----------|---|--|--|
| 1. Number of units: | 1 | In operation: | 1 | |
| 2. Proper flow distribution between units: | | [<input type="checkbox"/>] Yes | [<input type="checkbox"/>] No* | [<input checked="" type="checkbox"/>] NA |
| 3. Signs of short circuiting and/or overloads: | | [<input type="checkbox"/>] Yes | [<input checked="" type="checkbox"/>] No | |
| 4. Effluent weirs level: | | [<input checked="" type="checkbox"/>] Yes | [<input type="checkbox"/>] No* | |
| Clean: | | [<input checked="" type="checkbox"/>] Yes | [<input type="checkbox"/>] No* | |
| 5. Scum collection system working properly: | | [<input checked="" type="checkbox"/>] Yes | [<input type="checkbox"/>] No* | [<input type="checkbox"/>] NA |
| 6. Sludge collection system working properly: | | [<input checked="" type="checkbox"/>] Yes | [<input type="checkbox"/>] No* | |
| 7. Influent, effluent baffle systems working properly: | | [<input checked="" type="checkbox"/>] Yes | [<input type="checkbox"/>] No* | |
| 8. Chemical addition: | | [<input type="checkbox"/>] Yes | [<input checked="" type="checkbox"/>] No | |
| Chemicals: | | | | |
| 9. Effluent characteristics: | | Clear | | |
| 10. General condition: | | [<input type="checkbox"/>] Good | [<input checked="" type="checkbox"/>] Fair | [<input type="checkbox"/>] Poor |

Comments:

UNIT PROCESS: Chlorination

1. No. of chlorinators: **1** In operation: **1**
2. No. of evaporators: **0** In operation: **0**
3. No. of chlorine contact tanks: **1** In operation: **1**
4. Proper flow distribution between units: ☐ Yes ☐ No* ☒ NA
5. How is chlorine introduced into the wastewater?
☐ Perforated diffusers
☐ Injector with single entry point
☒ Other – **Tablet Feeder (Two Tubes)**
6. Chlorine residual in basin effluent: **No discharge at the time of inspection.**
7. Applied chlorine dosage: **Approximately 4 Tablets per Day when school is in session.**
8. Contact basins adequately baffled: ☒ Yes ☐ No*
9. Adequate ventilation:
a. cylinder storage area ☐ Yes ☐ No* ☒ NA
b. equipment room ☐ Yes ☐ No* ☒ NA
10. Proper safety precautions used: ☒ Yes ☐ No*
11. General condition: ☒ Good ☐ Fair ☐ Poor

Comments:

UNIT PROCESS: Dechlorination

- | | | | |
|--|--|---|--|
| 1. Chemical used: | <input type="checkbox"/> Sulfur Dioxide | <input checked="" type="checkbox"/> Bisulfite | <input type="checkbox"/> Other |
| 2. No. of sulfonators: | 0 | In operation: | 0 |
| 3. No. of evaporators: | 0 | In operation: | 0 |
| 4. No. of chemical feeders: | 1 | In operation: | 1 |
| 5. No. of contact tanks: | 1 | In operation: | 1 |
| 6. Proper flow distribution between units: | <input type="checkbox"/> Yes | <input type="checkbox"/> No* | <input checked="" type="checkbox"/> NA |
| 7. How is chemical introduced into the wastewater? | | | |
| | <input type="checkbox"/> Perforated diffusers | | |
| | <input type="checkbox"/> Injector with single entry point | | |
| | <input checked="" type="checkbox"/> Other – Tablet Feeder (Two Tubes) | | |
| 8. Control system operational: | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No* | |
| a. residual analyzers: | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No* | |
| b. system adjusted: | <input type="checkbox"/> Automatic | <input checked="" type="checkbox"/> Manual | <input type="checkbox"/> Other: |
| 9. Applied dechlorination dose: | Approximately 4 Tablets per Day when school is in session. | | |
| 10. Chlorine residual in basin effluent: | No discharge at the time of inspection. | | |
| 11. Contact basins adequately baffled: | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No* | <input type="checkbox"/> NA |
| 12. Adequate ventilation: | | | |
| a. cylinder storage area: | <input type="checkbox"/> Yes | <input type="checkbox"/> No* | <input checked="" type="checkbox"/> NA |
| b. equipment room: | <input type="checkbox"/> Yes | <input type="checkbox"/> No* | <input checked="" type="checkbox"/> NA |
| 13. Proper safety precautions used: | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No* | |
| 14. General condition: | <input checked="" type="checkbox"/> Good | <input type="checkbox"/> Fair | <input type="checkbox"/> Poor |

Comments:

UNIT PROCESS: Flow Measurement☐ Influent ☐ Intermediate ☒ Effluent

1. Type measuring device: **The operators' use a manual gauge on the dechlorination tablet tube feed unit.**
2. Present reading: **No discharge at the time of inspection.**
3. Bypass channel: ☐ Yes ☒ No
Metered: ☐ Yes ☐ No
4. Return flows discharged upstream from meter: ☐ Yes ☒ No
Identify:
5. Device operating properly: ☒ Yes ☐ No*
6. Date of last calibration: **NA**
7. Evidence of following problems:
- a. obstructions ☐ Yes* ☒ No
 b. grease ☐ Yes* ☒ No
8. General condition: ☒ Good ☐ Fair ☐ Poor

Comments:

UNIT PROCESS: Post Aeration

1. Number of units: **1** In operation: **1**
2. Proper flow distribution between units: ☐ Yes ☐ No* ☒ NA
3. Evidence of following problems:
- | | | | |
|---------------------------------|-------------------------------|--|-----------------------------|
| a. dead spots | <input type="checkbox"/> Yes* | <input checked="" type="checkbox"/> No | |
| b. excessive foam | <input type="checkbox"/> Yes* | <input checked="" type="checkbox"/> No | |
| c. poor aeration | <input type="checkbox"/> Yes* | <input checked="" type="checkbox"/> No | |
| d. mechanical equipment failure | <input type="checkbox"/> Yes* | <input checked="" type="checkbox"/> No | <input type="checkbox"/> NA |
4. How is the aerator controlled? ☐ Time clock ☐ Manual ☐ Continuous ☒ Other* ☐ NA
5. What is the current operating schedule? **Continuous**
6. Step weirs level: ☒ Yes ☐ No ☐ NA
7. Effluent D.O. level: **No discharge at the time of inspection.**
8. General condition: ☒ Good ☐ Fair ☐ Poor

Comments:

- **Aeration is achieved whenever water from the dechlorination unit is pumped to the cascade unit. This is achieved by two float activated pumps.**

UNIT PROCESS: Effluent/Plant Outfall

1. Type Outfall ☒ Shore based ☐ Submerged
2. Type if shore based: ☐ Wingwall ☒ Headwall ☐ Rip Rap
3. Flapper valve: ☐ Yes ☒ No ☐ NA
4. Erosion of bank: ☐ Yes ☒ No ☐ NA
5. Effluent plume visible? ☐ Yes* ☒ No
6. Condition of outfall and supporting structures: ☒ Good ☐ Fair ☐ Poor*
7. Final effluent, evidence of following problems:
 - a. oil sheen ☐ Yes* ☒ No
 - b. grease ☐ Yes* ☒ No
 - c. sludge bar ☐ Yes* ☒ No
 - d. turbid effluent ☐ Yes* ☒ No
 - e. visible foam ☐ Yes* ☒ No
 - f. unusual color ☐ Yes* ☒ No

Comments:

5. There was no discharge at the time of inspection.

**DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER DIVISION
LABORATORY INSPECTION REPORT**

10/01

FACILITY NO: VA0061301	INSPECTION DATE: May 15, 2008	PREVIOUS INSP. DATE: December 17, 2002	PREVIOUS EVALUATION: Deficiencies	TIME SPENT: 6 hours	
NAME/ADDRESS OF FACILITY: Berkley Elementary School STP 5979 Partlow Road Spotsylvania, VA 22553		FACILITY CLASS: () MAJOR (X) MINOR () SMALL () VPA/NDC	FACILITY TYPE: (X) MUNICIPAL () INDUSTRIAL () FEDERAL () COMMERCIAL LAB	UNANNOUNCED INSPECTION? () YES (X) NO	
				FY-SCHEDULED INSPECTION? (X) YES () NO	
INSPECTOR(S): Wilamena Harback		REVIEWERS:		PRESENT AT INSPECTION: Berkley ES: Stewart Robbins	
LABORATORY EVALUATION				DEFICIENCIES?	
				Yes	No
LABORATORY RECORDS					X
GENERAL SAMPLING & ANALYSIS					X
LABORATORY EQUIPMENT					X
FIELD DISSOLVED OXYGEN ANALYSIS PROCEDURES					X
FIELD pH ANALYSIS PROCEDURES					X
FIELD TOTAL RESIDUAL CHLORINE ANALYSIS PROCEDURES					X
QUALITY ASSURANCE/QUALITY CONTROL					
Y/N	QUALITY ASSURANCE METHOD	PARAMETERS		FREQUENCY	
Y	REPLICATE SAMPLES	TRC & pH		Each run	
N	SPIKED SAMPLES				
Y	STANDARD SAMPLES	TRC & pH		Daily	
N	SPLIT SAMPLES				
Y	SAMPLE BLANKS	TRC		Each run	
N	OTHER				
N	EPA-DMR QA DATA? DMR-QA 27	RATING: () No Deficiency () Deficiency (X) NA			
N	QC SAMPLES PROVIDED?	RATING: () No Deficiency () Deficiency (X) NA			

LABORATORY RECORDS SECTION

LABORATORY RECORDS INCLUDE THE FOLLOWING:

<input checked="" type="checkbox"/>	SAMPLING DATE	<input checked="" type="checkbox"/>	ANALYSIS DATE	<input type="checkbox"/>	CONT MONITORING CHART
<input checked="" type="checkbox"/>	SAMPLING TIME	<input checked="" type="checkbox"/>	ANALYSIS TIME	<input checked="" type="checkbox"/>	INSTRUMENT CALIBRATION
<input checked="" type="checkbox"/>	SAMPLE LOCATION	<input checked="" type="checkbox"/>	TEST METHOD	<input checked="" type="checkbox"/>	INSTRUMENT MAINTENANCE
				<input checked="" type="checkbox"/>	CERTIFICATE OF ANALYSIS

WRITTEN INSTRUCTIONS INCLUDE THE FOLLOWING:

<input checked="" type="checkbox"/>	SAMPLING SCHEDULES	<input checked="" type="checkbox"/>	CALCULATIONS	<input checked="" type="checkbox"/>	ANALYSIS PROCEDURES
-------------------------------------	--------------------	-------------------------------------	--------------	-------------------------------------	---------------------

	YES	NO	N/A
DO ALL ANALYSTS INITIAL THEIR WORK?	<input checked="" type="checkbox"/>		
DO BENCH SHEETS INCLUDE ALL INFORMATION NECESSARY TO DETERMINE RESULTS?	<input checked="" type="checkbox"/>		
IS THE DMR COMPLETE AND CORRECT? MONTH(S) REVIEWED: April 2007	<input checked="" type="checkbox"/>		
ARE ALL MONITORING VALUES REQUIRED BY THE PERMIT REPORTED?	<input checked="" type="checkbox"/>		

GENERAL SAMPLING AND ANALYSIS SECTION

	YES	NO	N/A
ARE SAMPLE LOCATION(S) ACCORDING TO PERMIT REQUIREMENTS?	<input checked="" type="checkbox"/>		
ARE SAMPLE COLLECTION PROCEDURES APPROPRIATE?	<input checked="" type="checkbox"/>		
IS SAMPLE EQUIPMENT CONDITION ADEQUATE?	<input checked="" type="checkbox"/>		
IS FLOW MEASUREMENT ACCORDING TO PERMIT REQUIREMENTS?	<input checked="" type="checkbox"/>		
ARE COMPOSITE SAMPLES REPRESENTATIVE OF FLOW?	<input checked="" type="checkbox"/>		
ARE SAMPLE HOLDING TIMES AND PRESERVATION ADEQUATE?	<input checked="" type="checkbox"/>		
IF ANALYSIS IS PERFORMED AT ANOTHER LOCATION, ARE SHIPPING PROCEDURES ADEQUATE? LIST PARAMETERS AND NAME & ADDRESS OF LAB: Massaponax WWTF (TSS, BOD₅, and Ammonia)	<input checked="" type="checkbox"/>		

LABORATORY EQUIPMENT SECTION

	YES	NO	N/A
IS LABORATORY EQUIPMENT IN PROPER OPERATING RANGE?	<input checked="" type="checkbox"/>		
ARE ANNUAL THERMOMETER CALIBRATION(S) ADEQUATE?	<input checked="" type="checkbox"/>		
IS THE LABORATORY GRADE WATER SUPPLY ADEQUATE?			<input checked="" type="checkbox"/>
ARE ANALYTICAL BALANCE(S) ADEQUATE?			<input checked="" type="checkbox"/>

LABORATORY INSPECTION REPORT SUMMARY

FACILITY NAME: Berkley Elementary School STP	FACILITY NO: VA0061301	INSPECTION DATE: May 15, 2008
<input type="checkbox"/> Deficiencies <input checked="" type="checkbox"/> No Deficiencies		
LABORATORY RECORDS		
The Laboratory Records section had No Deficiencies noted during the inspection.		
GENERAL SAMPLING AND ANALYSIS		
The General Sampling and Analysis section had No Deficiencies noted during the inspection.		
LABORATORY EQUIPMENT		
The Laboratory Equipment section had No Deficiencies noted during the inspection.		
INDIVIDUAL PARAMETERS		
pH - Field		
The analysis for the parameter of pH had No Deficiencies noted during the inspection.		
Total Residual Chlorine (TRC) - Field		
The analysis for the parameter of TRC had No Deficiencies noted during the inspection.		
Dissolved Oxygen (DO) - Field		
The analysis for the parameter of DO had No Deficiencies noted during the inspection.		

ANALYST:	Stewart Robbins	VPDES NO	VA0061301
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Parameter: Hydrogen Ion (pH)

Method: Electrometric

01/08

Meter: Oakton pH6 Acorn Series

METHOD OF ANALYSIS

X	18 th Edition of Standard Methods-4500-H-B
	21 st or On-Line Edition of Standard Methods-4500-H-B (00)

pH is a method defined analyte so modifications are not allowed. [40 CFR Part 136.6]

	Y	N
1) Is a certificate of operator competence or initial demonstration of capability available for <u>each analyst/operator</u> performing the analysis? NOTE: Analyze 4 samples of known pH. May use external source of buffer (different lot/manufacturer than buffers used to calibrate meter). Recovery for each of the 4 samples must be ± 0.1 SU of the known concentration of the sample. [SM 1020 B.1]	X	
2) Is the electrode in good condition (no chloride precipitate, etc.)? [2.b/c and 5.b]	X	
3) Is electrode storage solution in accordance with manufacturer's instructions? [Mfr.]	X	
4) Is meter calibrated on at least a daily basis using three buffers all of which are at the same temperature? [4.a] NOTE: Follow manufacturer's instructions.	X	
5) After calibration, is a buffer analyzed as a check sample to verify that calibration is correct? Agreement should be within ± 0.1 SU. [4.a]	X	
6) Do the buffer solutions appear to be free of contamination or growths? [3.1]	X	
7) Are buffer solutions within their listed shelf life or have they been prepared within the last 4 weeks? [3.a]	X	
8) Is the cap or sleeve covering the access hole on the reference electrode removed when measuring pH? [Mfr.]	X	
9) For meters with ATC that also have temperature display, was the thermometer calibrated annually? [SM2550 B.1]	X	
10) Is the temperature of buffer solutions and samples recorded when determining pH? [4.a]	X	
11) Is sample analyzed within 15 minutes of collection? [40 CFR 136.6]	X	
12) Was the electrode rinsed and then blotted dry between reading solutions (Disregard if a portion of the next sample analyzed is used as the rinse solution)? [4.a]	X	
13) Is the sample stirred gently at a constant speed during measurement? [4.b]	X	
14) Does the meter hold a steady reading after reaching equilibrium? [4.b]	X	
15) Is a duplicate sample analyzed after every 20 samples if citing 18 th or 19 th Edition [1020 B.6] or after every 10 samples for 20 th or 21 st Edition [Part 1020] Note: Not required for <i>in situ</i> samples.	X	
16) Is pH of duplicate samples within 0.1 SU of the original sample? [Part 1020]	X	
17) Is there a written procedure for which result will be reported on DMR (Sample or Duplicate) and is this procedure followed? [DEQ]	X	

COMMENTS:	<ul style="list-style-type: none"> The facility uses Red Bird for their pH 4.0 buffer (expires 07/27/08), Blue Bird for their pH 7.0 buffer (expires 7/27/08) and Fisher for their 10.0 buffer (expires 6/2009). Buffers are made fresh monthly and were last changed on 05/12/08. The facility does their standard check against a pH 7.0 buffer. The annual NIST verification was performed on 05/08/08.
PROBLEMS:	No problems discussed or observed.

ANALYST:	Stewart Robbins	VPDES NO	VA0061301
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Parameter: Total Residual Chlorine
Method: DPD Colorimetric (HACH Pocket Colorimeter™)
01/08

Instrument: HACH Pocket Colorimeter

METHOD OF ANALYSIS:

X	HACH Manufacturer's Instructions (Method 8167) plus an edition of Standard Methods
	18 th Edition of Standard Methods 4500-Cl G
	21 st Edition of Standard Methods 4500-Cl G (00)

		Y	N
1)	Is a certificate of operator competence or initial demonstration of capability available for each analyst/operator performing this analysis? NOTE: Analyze 4 samples of known TRC. Must use a lot number or source that is different from that used to prepare calibration standards. May not use SpecV™. [SM 1020 B.1]	X	
2)	Are the DPD PermaChem® Powder Pillows stored in a cool, dry place? [Mfr.]	X	
3)	Are the pillows within the manufacturer's expiration date? [Mfr.]	X	
4)	Has buffering capability of DPD pillows been checked annually? (Pillows should adjust sample pH to between 6 and 7) [Mfr.]	X	
5)	When pH adjustment is required, is H ₂ SO ₄ or NaOH used? [11.3.1]	X	
6)	Are cells clean and in good condition? [Mfr.]	X	
7)	Is the low range (0.01-mg/L resolution) used for samples containing residuals from 0-2.00 mg/L? [Mfr.]	X	
8)	Is calibration curve developed (may use manufacturer's calibration) with daily verification using a high and a low standard? NOTE: May use manufacturer's installed calibration and commercially available chlorine standards for daily calibration verifications. [18th ed 1020 B.5; 21st ed 4020 B.2.b]	X	
9)	Is the 10-mL cell (2.5-cm diameter) used for samples from 0-2.00 mg/L? [Mfr.]	X	
10)	Is the meter zeroed correctly by using sample as blank for the cell used? [Mfr.]	X	
11)	Is the instrument cap placed correctly on the meter body when the meter is zeroed and when the sample is analyzed? [Mfr.]	X	
12)	Is the DPD Total Chlorine PermaChem® Powder Pillow mixed into the sample? [HACH 11.1]	X	
13)	Is the analysis made at least three minutes but not more than six minutes after PermaChem® Powder Pillow addition? [11.2]	X	
14)	If read-out is flashing [2.20], is sample diluted correctly, then reanalyzed? [1.2 & 2.0]	X	
15)	Are samples analyzed within 15 minutes of collection? [40 CFR Part 136]	X	
16)	Is a duplicate sample analyzed after every 20 samples if citing 18th Edition [SM 1020 B.6] or daily for 21st Edition [SM 4020 B.3.c]?	X	
17)	If duplicate sample is analyzed, is the relative percent difference (RPD) ≤ 20? [18th ed. Table 1020 I; 21st ed. DEQ]	X	

COMMENTS:	<ul style="list-style-type: none"> DPD powder pillows expire in December 2012. Spec Check is used and expires August 2009.
PROBLEMS:	3) Conducted on April 2, 2008. No problems discussed or observed.

ANALYST:	Stewart Robbins	VPDES NO.	VA0061301
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Parameter: Dissolved Oxygen
Method: Electrode
Facility Elevation - 0 ft
01/08

Meter: YSI 550A

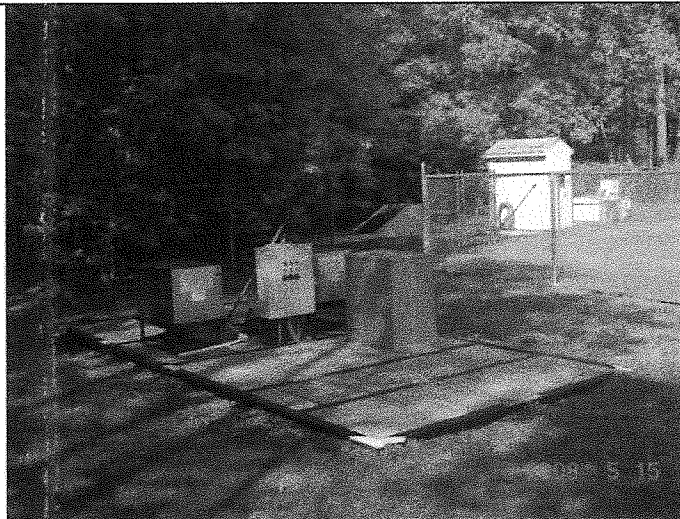
METHOD OF ANALYSIS:

X	18 th Edition of Standard Methods-4500-O G
	21 st or Online Editions of Standard Methods-4500-O G (01)

DO is a method defined analyte so modifications are not allowed. [40 CFR Part 136.6]

	Y	N
	In-Situ	
1) If samples are collected, is collection carried out with a minimum of turbulence and air bubble formation and is the sample bottle allowed to overflow several times its volume? [B.3]	X	
2) Are meter and electrode operable and providing consistent readings? [3]	X	
3) Is membrane in good condition without trapped air bubbles? [3.b]	X	
4) Is correct filling solution used in electrode? [Mfr.]	X	
5) Are water droplets shaken off the membrane prior to calibration? [Mfr.]	X	
6) Is meter calibrated before use or at least daily? [Mfr.]	X	
7) Is calibration procedure performed according to manufacturer's instructions? [Mfr.]	X	
8) Is sample stirred during analysis? [Mfr.]	In-Situ	
9) Is the sample analysis procedure performed according to manufacturer's instructions? [Mfr.]	X	
10) Is meter stabilized before reading D.O.? [Mfr.]	X	
11) Is electrode stored according to manufacturer's instructions? [Mfr.]	X	
12) Is a duplicate sample analyzed after every 20 samples if citing 18 th or 19 th Edition [1020 B.6] or after every 10 samples for 20 th or 21 st Edition [Part 1020] Note: Not required for <i>in situ</i> samples.	In-Situ	
13) If a duplicate sample is analyzed, is the reported value for that sampling event, the average concentration of the sample and the duplicate? [DEQ]	In-Situ	
14) If a duplicate sample is analyzed, is the relative percent difference (RPD) < 20? [18 th ed. Table 1020 I; 21 st ed. DEQ]	In-Situ	

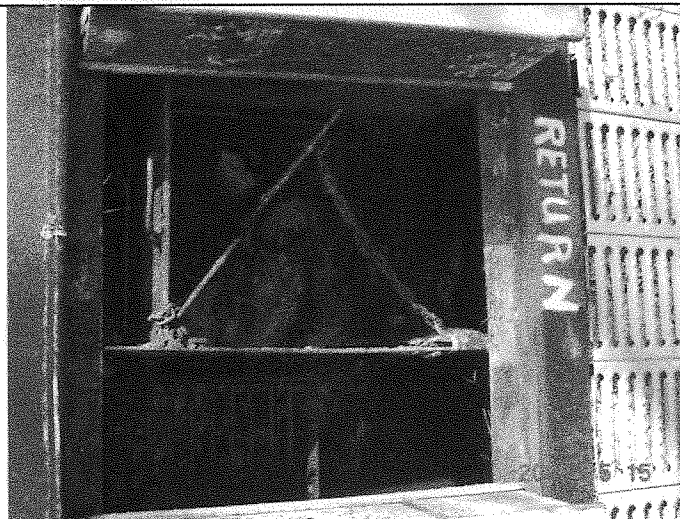
COMMENTS:	• NIST verification was performed on 05/08/08.
PROBLEMS:	No problems discussed or observed.



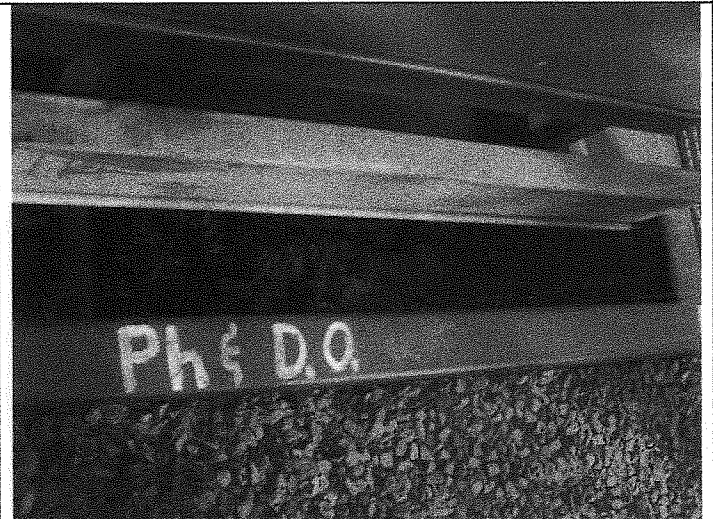
1) STP overview.



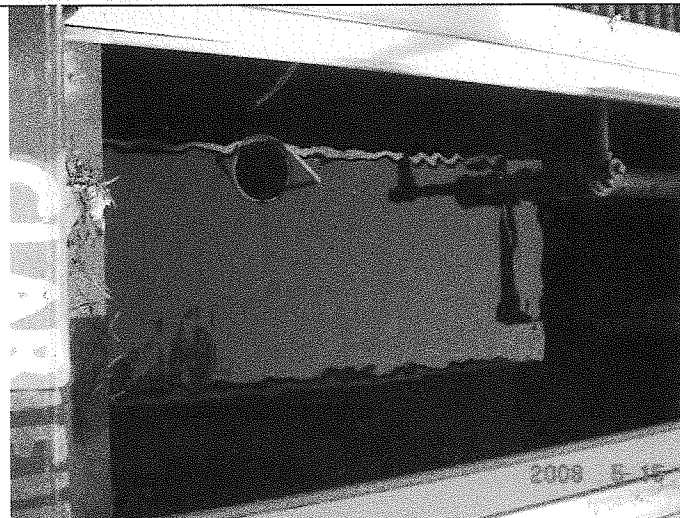
2) Influent bar screen



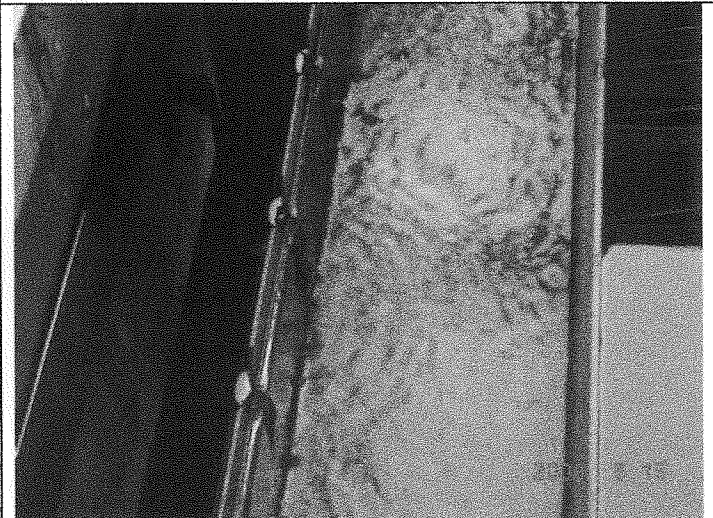
3) Return line



4) Activated sludge aeration (extended) tank.



5) Clarifier with scum collector.



6) Clarifier weirs just starting to flow over



7) Chlorine tube feeders at the contact tank.



8) De-chlorination tube feeders.



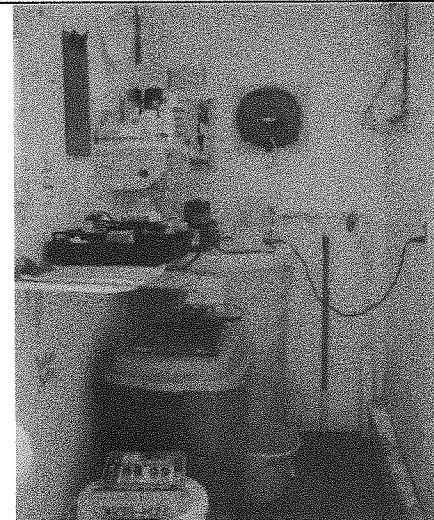
9) Post aeration



10) Outfall structure with sign



11) Discharge stream



12) Lab building and chemical storage.

To: Joan Crowther
From: Jennifer Carlson

Date: August 29, 2012
Subject: Planning Statement for Berkeley Elementary School WWTP
Permit Number: VA0061301

Information for Outfall 001:

Discharge Type: Municipal
Discharge Flow: 0.0053 MGD
Receiving Stream: Mat River, UT
Latitude / Longitude: 38° 07' 07"/-77° 36' 52'
Rivermile: 1.06
Streamcode: 8-XDP
Waterbody: VAN-F18R
Water Quality Standards: Class III, Section 3
Drainage Area: 0.05 mi²

1. Please provide water quality monitoring information for the receiving stream segment. If there is not monitoring information for the receiving stream segment, please provide information on the nearest downstream monitoring station, including how far downstream the monitoring station is from the outfall.

This facility discharges into an unnamed tributary to the Mat River. The nearest downstream DEQ monitoring station is 8-MAT001.87 on the Mat River, located at the Route 647 bridge crossing, approximately 1.76 miles downstream of Outfall 001. The following is the water quality summary for this segment of the Mat River, as taken from the Draft 2012 Integrated Assessment*:

Class III, Section 3.

DEQ ambient monitoring station 8-MAT001.87, at Route 647 (Blaydes Corner Road).

The aquatic life and recreation uses are fully supporting. The wildlife and fish consumption uses were not assessed.

**The Draft 2012 Integrated Report (IR) has been through the public comment period and reviewed by EPA. The 2012 IR is currently being finalized and prepared for release.*

2. Does this facility discharge to a stream segment on the 303(d) list? If yes, please fill out Table A.

No.

3. Are there any downstream 303(d) listed impairments that are relevant to this discharge? If yes, please fill out Table B.

Yes.

Table B. Information on Downstream 303(d) Impairments and TMDLs

Waterbody Name	Impaired Use	Cause	Distance From Outfall	TMDL completed	WLA	Basis for WLA	TMDL Schedule
<i>Impairment Information in the Draft 2012 Integrated Report*</i>							
Matta River	Aquatic Life	Benthic Macroinvertebrates	4.0 miles	No	N/A	N/A	2020
	Recreation	<i>E. coli</i>	5.2 miles	No	N/A	N/A	2016

**The Draft 2012 Integrated Report (IR) has been through the public comment period and reviewed by EPA. The 2012 IR is currently being finalized and prepared for release.*

4. Is there monitoring or other conditions that Planning/Assessment needs in the permit?

There is a completed downstream TMDL for the aquatic life use impairment for the Chesapeake Bay. However, the Bay TMDL and the WLAs contained within the TMDL are not addressed in this planning statement.

5. Fact Sheet Requirements – Please provide information regarding any drinking water intakes located within a 5 mile radius of the discharge point.

There are no public water supply intakes within a 5 mile radius.

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Berkeley Elementary School WWTP

Permit No.: VA0061301

Receiving Stream: Mat River, UT

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information			Stream Flows			Mixing Information			Effluent Information		
Mean Hardness (as CaCO3) =	mg/L		1Q10 (Annual) =	0 MGD		Annual - 1Q10 Mix =	100 %		Mean Hardness (as CaCO3) =	50 mg/L	
90% Temperature (Annual) =	deg C		7Q10 (Annual) =	0 MGD		- 7Q10 Mix =	100 %		90% Temp (Annual) =	22.2 deg C	
90% Temperature (Wet season) =	deg C		3Q10 (Annual) =	0 MGD		- 3Q10 Mix =	100 %		90% Temp (Wet season) =	deg C	
90% Maximum pH =	SU		1Q10 (Wet season) =	0 MGD		Wet Season - 1Q10 Mix =	100 %		90% Maximum pH =	7.68 SU	
10% Maximum pH =	SU		3Q10 (Wet season)	0 MGD		- 3Q10 Mix =	100 %		10% Maximum pH =	SU	
Tier Designation (1 or 2) =	1		3Q35 =	0 MGD					Discharge Flow =	0.0053 MGD	
Public Water Supply (PWS) Y/N? =	n		Harmonic Mean =	0 MGD							
Trout Present Y/N? =	n										
Early Life Stages Present Y/N? =	y										

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
		Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)
Acenaphthene	5	--	--	na	9.9E+02	--	na	--	--	9.9E+02	--	--	--	--	--	9.9E+02
Acrolein	0	--	--	na	9.3E+00	--	na	--	--	9.3E+00	--	--	--	--	--	9.3E+00
Acrylonitrile ^c	0	--	--	na	2.5E+00	--	na	--	--	2.5E+00	--	--	--	--	--	2.5E+00
Aldrin ^c	0	3.0E+00	--	na	5.0E-04	--	na	--	--	5.0E-04	--	--	--	3.0E+00	--	5.0E-04
Ammonia-N (mg/l) (Yearly)	0	1.49E+01	2.23E+00	na	--	1.49E+01	2.23E+00	na	--	--	--	--	--	1.49E+01	2.23E+00	na
Ammonia-N (mg/l) (High Flow)	0	1.49E+01	3.66E+00	na	--	1.49E+01	3.66E+00	na	--	--	--	--	--	1.49E+01	3.66E+00	na
Anthracene	0	--	--	na	4.0E+04	--	na	--	--	4.0E+04	--	--	--	--	--	4.0E+04
Antimony	0	--	--	na	6.4E+02	--	na	--	--	6.4E+02	--	--	--	--	--	6.4E+02
Arsenic	0	3.4E+02	1.5E+02	na	--	3.4E+02	1.5E+02	na	--	--	--	--	--	3.4E+02	1.5E+02	na
Barium	0	--	--	na	--	--	na	--	--	--	--	--	--	--	--	na
Benzene ^c	0	--	--	na	5.1E+02	--	na	--	--	5.1E+02	--	--	--	--	--	5.1E+02
Benzidine ^c	0	--	--	na	2.0E-03	--	na	--	--	2.0E-03	--	--	--	--	--	2.0E-03
Benzo (a) anthracene ^c	0	--	--	na	1.8E-01	--	na	--	--	1.8E-01	--	--	--	--	--	1.8E-01
Benzo (b) fluoranthene ^c	0	--	--	na	1.8E-01	--	na	--	--	1.8E-01	--	--	--	--	--	1.8E-01
Benzo (k) fluoranthene ^c	0	--	--	na	1.8E-01	--	na	--	--	1.8E-01	--	--	--	--	--	1.8E-01
Benzo (a) pyrene ^c	0	--	--	na	5.3E+00	--	na	--	--	5.3E+00	--	--	--	--	--	5.3E+00
Bis(2-Chloroethyl) Ether ^c	0	--	--	na	6.5E+04	--	na	--	--	6.5E+04	--	--	--	--	--	6.5E+04
Bis(2-Chloroisopropyl) Ether ^c	0	--	--	na	2.2E+01	--	na	--	--	2.2E+01	--	--	--	--	--	2.2E+01
Bis 2-Ethylhexyl Phthalate ^c	0	--	--	na	1.4E+03	--	na	--	--	1.4E+03	--	--	--	--	--	1.4E+03
Bromofom ^c	0	--	--	na	1.9E+03	--	na	--	--	1.9E+03	--	--	--	--	--	1.9E+03
Butylbenzylphthalate	0	1.8E+00	6.6E-01	na	--	1.8E+00	6.6E-01	na	--	--	--	--	--	1.8E+00	6.6E-01	na
Cadmium	0	--	--	na	1.6E+01	--	na	--	--	1.6E+01	--	--	--	--	--	1.6E+01
Carbon Tetrachloride ^c	0	--	--	na	8.1E-03	--	na	--	--	8.1E-03	--	--	--	--	--	8.1E-03
Chlordane ^c	0	2.4E+00	4.3E-03	na	--	2.4E+00	4.3E-03	na	--	--	--	--	--	2.4E+00	4.3E-03	na
Chloride	0	8.6E+05	2.3E+05	na	--	8.6E+05	2.3E+05	na	--	--	--	--	--	8.6E+05	2.3E+05	na
TRC	0	1.9E+01	1.1E+01	na	--	1.9E+01	1.1E+01	na	--	--	--	--	--	1.9E+01	1.1E+01	na
Chlorobenzene	0	--	--	na	1.6E+03	--	na	--	--	1.6E+03	--	--	--	--	--	1.6E+03

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane ^c	0	--	--	na	1.3E+02	--	--	na	1.3E+02	--	--	--	--	--	--	--	--	--	--	na	1.3E+02
Chloroform	0	--	--	na	1.1E+04	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	--	--	na	1.1E+04
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	--	--	na	1.6E+03
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	--	--	na	1.5E+02
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	na	--	--	--	--	--	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	na	--
Chromium III	0	3.2E+02	4.2E+01	na	--	3.2E+02	4.2E+01	na	--	--	--	--	--	3.2E+02	4.2E+01	na	--	3.2E+02	4.2E+01	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	--	--	--	--	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	--	--	--	--	na	--	--	--	na	--
Chrysene ^c	0	--	--	na	1.8E-02	--	--	na	1.8E-02	--	--	--	--	--	--	na	--	--	--	na	1.8E-02
Copper	0	7.0E+00	5.0E+00	na	--	7.0E+00	5.0E+00	na	--	--	--	--	--	7.0E+00	5.0E+00	na	--	7.0E+00	5.0E+00	na	--
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	2.2E+01	5.2E+00	na	1.6E+04	--	--	--	--	2.2E+01	5.2E+00	na	--	2.2E+01	5.2E+00	na	1.6E+04
DDD ^c	0	--	--	na	3.1E-03	--	--	na	3.1E-03	--	--	--	--	--	--	na	--	--	--	na	3.1E-03
DDE ^c	0	--	--	na	2.2E-03	--	--	na	2.2E-03	--	--	--	--	--	--	na	--	--	--	na	2.2E-03
DDT ^c	0	1.1E+00	1.0E-03	na	2.2E-03	1.1E+00	1.0E-03	na	2.2E-03	--	--	--	--	--	--	na	--	1.1E+00	1.0E-03	na	2.2E-03
Demeton	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	1.0E-01	na	--	--	1.0E-01	na	--
Diazinon	0	1.7E-01	1.7E-01	na	--	1.7E-01	1.7E-01	na	--	--	--	--	--	1.7E-01	1.7E-01	na	--	1.7E-01	1.7E-01	na	--
Dibenz(a,h)anthracene ^c	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	na	--	--	--	na	1.8E-01
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	1.3E+03	--	--	--	--	--	--	na	--	--	--	na	1.3E+03
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	9.6E+02	--	--	--	--	--	--	na	--	--	--	na	9.6E+02
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	1.9E+02	--	--	--	--	--	--	na	--	--	--	na	1.9E+02
3,3-Dichlorobenzidine ^c	0	--	--	na	2.8E-01	--	--	na	2.8E-01	--	--	--	--	--	--	na	--	--	--	na	2.8E-01
Dichlorobromomethane ^c	0	--	--	na	1.7E+02	--	--	na	1.7E+02	--	--	--	--	--	--	na	--	--	--	na	1.7E+02
1,2-Dichloroethane ^c	0	--	--	na	3.7E+02	--	--	na	3.7E+02	--	--	--	--	--	--	na	--	--	--	na	3.7E+02
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	7.1E+03	--	--	--	--	--	--	na	--	--	--	na	7.1E+03
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	1.0E+04	--	--	--	--	--	--	na	--	--	--	na	1.0E+04
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	2.9E+02	--	--	--	--	--	--	na	--	--	--	na	2.9E+02
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	na	--	--	--	na	--
1,2-Dichloropropane ^c	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	na	--	--	--	na	1.5E+02
1,3-Dichloropropene ^c	0	--	--	na	2.1E+02	--	--	na	2.1E+02	--	--	--	--	--	--	na	--	--	--	na	2.1E+02
Dieldrin ^c	0	2.4E-01	5.6E-02	na	5.4E-04	2.4E-01	5.6E-02	na	5.4E-04	--	--	--	--	2.4E-01	5.6E-02	na	--	2.4E-01	5.6E-02	na	5.4E-04
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	4.4E+04	--	--	--	--	--	--	na	--	--	--	na	4.4E+04
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	8.5E+02	--	--	--	--	--	--	na	--	--	--	na	8.5E+02
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	1.1E+06	--	--	--	--	--	--	na	--	--	--	na	1.1E+06
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	4.5E+03	--	--	--	--	--	--	na	--	--	--	na	4.5E+03
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	na	--	--	--	na	5.3E+03
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	2.8E+02	--	--	--	--	--	--	na	--	--	--	na	2.8E+02
2,4-Dinitrotoluene ^c	0	--	--	na	3.4E+01	--	--	na	3.4E+01	--	--	--	--	--	--	na	--	--	--	na	3.4E+01
Dioxin 2,3,7,8- tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	5.1E-08	--	--	--	--	--	--	na	--	--	--	na	5.1E-08
1,2-Diphenylhydrazine ^c	0	--	--	na	2.0E+00	--	--	na	2.0E+00	--	--	--	--	--	--	na	--	--	--	na	2.0E+00
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	2.2E-01	5.6E-02	na	--	2.2E-01	5.6E-02	na	8.9E+01
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	2.2E-01	5.6E-02	na	--	2.2E-01	5.6E-02	na	8.9E+01
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	2.2E-01	5.6E-02	--	--	--	--	--	--	2.2E-01	5.6E-02	--	--	2.2E-01	5.6E-02	--	--
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	na	--	--	--	na	8.9E+01
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	8.6E-02	3.6E-02	na	6.0E-02	--	--	--	--	8.6E-02	3.6E-02	na	--	8.6E-02	3.6E-02	na	6.0E-02
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	3.0E-01	--	--	--	--	--	--	na	--	--	--	na	3.0E-01

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	2.1E+03	--	--	--	--	--	--	na
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	1.4E+02	--	--	--	--	--	--	na
Fluorene	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	na
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	na
Guthion	0	--	1.0E-02	na	--	--	1.0E-02	na	--	--	--	--	--	--	1.0E-02	na
Heptachlor ^c	0	5.2E-01	3.8E-03	na	7.9E-04	5.2E-01	3.8E-03	na	7.9E-04	--	--	--	--	5.2E-01	3.8E-03	na
Heptachlor Epoxide ^c	0	5.2E-01	3.8E-03	na	3.9E-04	5.2E-01	3.8E-03	na	3.9E-04	--	--	--	--	5.2E-01	3.8E-03	na
Hexachlorobenzene ^c	0	--	--	na	2.9E-03	--	--	na	2.9E-03	--	--	--	--	--	--	na
Hexachlorobutadiene ^c	0	--	--	na	1.8E+02	--	--	na	1.8E+02	--	--	--	--	--	--	na
Hexachlorocyclohexane	0	--	--	na	4.9E-02	--	--	na	4.9E-02	--	--	--	--	--	--	na
Alpha-BHC ^c	0	--	--	na	1.7E-01	--	--	na	1.7E-01	--	--	--	--	--	--	na
Beta-BHC ^c	0	--	--	na	1.8E+00	9.5E-01	--	na	1.8E+00	--	--	--	--	9.5E-01	--	na
Hexachlorocyclohexane	0	--	--	na	1.1E+03	--	--	na	1.1E+03	--	--	--	--	--	--	na
Gamma-BHC ^c (Lindane)	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	na
Hexachlorocyclopentadiene	0	--	--	na	--	--	2.0E+00	na	--	--	--	--	--	--	2.0E+00	na
Hexachloroethane ^c	0	--	2.0E+00	na	--	--	--	na	1.8E-01	--	--	--	--	--	--	na
Hydrogen Sulfide	0	--	--	na	1.8E-01	--	--	na	--	--	--	--	--	--	--	na
Indeno (1,2,3-cd) pyrene ^c	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	na
Iron	0	--	--	na	9.6E+03	--	--	na	9.6E+03	--	--	--	--	--	--	na
Isophorone ^c	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	na
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	0.0E+00	na
Lead	0	4.9E+01	5.6E+00	na	--	4.9E+01	5.6E+00	na	--	--	--	--	--	4.9E+01	5.6E+00	na
Malathion	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	1.0E-01	na
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	na
Mercury	0	1.4E+00	7.7E-01	--	--	1.4E+00	7.7E-01	--	--	--	--	--	--	1.4E+00	7.7E-01	--
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	1.5E+03	--	--	--	--	--	--	na
Methylene Chloride ^c	0	--	--	na	5.9E+03	--	--	na	5.9E+03	--	--	--	--	--	--	na
Methoxychlor	0	--	3.0E-02	na	--	--	3.0E-02	na	--	--	--	--	--	--	3.0E-02	na
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	0.0E+00	na
Nickel	0	1.0E+02	1.1E+01	na	4.6E+03	1.0E+02	1.1E+01	na	4.6E+03	--	--	--	--	1.0E+02	1.1E+01	na
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	na
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	6.9E+02	--	--	--	--	--	--	na
N-Nitrosodimethylamine ^c	0	--	--	na	3.0E+01	--	--	na	3.0E+01	--	--	--	--	--	--	na
N-Nitrosodiphenylamine ^c	0	--	--	na	6.0E+01	--	--	na	6.0E+01	--	--	--	--	--	--	na
N-Nitrosodi-n-propylamine ^c	0	--	--	na	5.1E+00	--	--	na	5.1E+00	--	--	--	--	--	--	na
Nonylphenol	0	2.8E+01	6.6E+00	--	--	2.8E+01	6.6E+00	na	--	--	--	--	--	2.8E+01	6.6E+00	na
Parathion	0	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	--	--	--	--	6.5E-02	1.3E-02	na
PCB Total ^c	0	--	1.4E-02	na	6.4E-04	--	1.4E-02	na	6.4E-04	--	--	--	--	--	1.4E-02	na
Pentachlorophenol ^c	0	7.7E-03	5.9E-03	na	3.0E+01	7.7E-03	5.9E-03	na	3.0E+01	--	--	--	--	7.7E-03	5.9E-03	na
Phenol	0	--	--	na	8.6E+05	--	--	na	8.6E+05	--	--	--	--	--	--	na
Pyrene	0	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	--	--	--	--	na
Radionuclides	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	na
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	na
Beta and Photon Activity (mrem/yr)	0	--	--	na	4.0E+00	--	--	na	4.0E+00	--	--	--	--	--	--	na
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	na
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	na

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	2.0E+01	5.0E+00	na	4.2E+03	--	--	--	--	2.0E+01	5.0E+00	na
Silver	0	1.0E+00	--	na	--	1.0E+00	--	na	--	--	--	--	--	1.0E+00	--	na
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	na
1,1,2,2-Tetrachloroethane ^c	0	--	--	na	4.0E+01	--	--	na	4.0E+01	--	--	--	--	--	--	na
Tetrachloroethylene ^c	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	na
Thallium	0	--	--	na	4.7E-01	--	--	na	4.7E-01	--	--	--	--	--	--	na
Toluene	0	--	--	na	6.0E+03	--	--	na	6.0E+03	--	--	--	--	--	--	na
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	na
Toxaphene ^c	0	7.3E-01	2.0E-04	na	2.8E-03	7.3E-01	2.0E-04	na	2.8E-03	--	--	--	--	7.3E-01	2.0E-04	na
Tributyltin	0	4.6E-01	7.2E-02	na	--	4.6E-01	7.2E-02	na	--	--	--	--	--	4.6E-01	7.2E-02	na
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	7.0E+01	--	--	--	--	--	--	na
1,1,2-Trichloroethane ^c	0	--	--	na	1.6E+02	--	--	na	1.6E+02	--	--	--	--	--	--	na
Trichloroethylene ^c	0	--	--	na	3.0E+02	--	--	na	3.0E+02	--	--	--	--	--	--	na
2,4,6-Trichlorophenol ^c	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	na
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	na
Vinyl Chloride ^c	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	na
Zinc	0	6.5E+01	6.8E+01	na	2.6E+04	6.5E+01	6.8E+01	na	2.6E+04	--	--	--	--	6.5E+01	6.8E+01	na

Notes:

- All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
- Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
- Metals measured as Dissolved, unless specified otherwise
- "C" indicates a carcinogenic parameter
- Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
Antidegradation WLAs are based upon a complete mix.
- Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
= (0.1(WQC - background conc.) + background conc.) for human health
- WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	6.4E+02
Arsenic	9.0E+01
Barium	na
Cadmium	3.9E-01
Chromium III	2.5E+01
Chromium VI	6.4E+00
Copper	2.8E+00
Iron	na
Lead	3.4E+00
Manganese	na
Mercury	4.6E-01
Nickel	6.8E+00
Selenium	3.0E+00
Silver	4.2E-01
Zinc	2.6E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

Berkeley Elementary School pH and Temperature Data January 2009 - July 2012

Month/ Year	Day	Temp °C	pH
Jan-09	1	n/d	n/d
	2	n/d	n/d
	3	n/d	n/d
	4	n/d	n/d
	5	11.2	7.06
	6	8.6	6.88
	7	n/d	n/d
	8	8.7	6.83
	9	9.8	7.16
	10	n/d	n/d
	11	n/d	n/d
	12	9.8	7.39
	13	8.8	7.1
	14	9	7.4
	15	7.6	7.8
	16	6.6	7.4
	17	n/d	n/d
	18	n/d	n/d
	19	n/d	n/d
	20	n/d	n/d
	21	7	7.04
	22	7.6	7.1
	23	6.9	7.49
	24	n/d	n/d
	25	n/d	n/d
	26	4.7	7.11
	27	n/d	n/d
	28	n/d	n/d
	29	8.6	7.4
	30	n/d	n/d
	31	n/d	n/d
Feb-09	1	n/d	n/d
	2	7.4	6.91
	3	8.2	7.24
	4	7.8	7.01
	5	7	7.32
	6	7.8	6.99
	7	n/d	n/d
	8	n/d	n/d
	9	9.4	7.98
	10	9.8	7.35
	11	11.5	7.34
	12	12	6.95
	13	10.6	7.22
	14	n/d	n/d

Month/ Year	Day	Temp °C	pH
Feb-09	15	n/d	n/d
	16	7.8	7.26
	17	7.8	8.21
	18	9.6	7.2
	19	11	7.17
	20	9.4	7.07
	21	n/d	n/d
	22	n/d	n/d
	23	6.2	7.4
	24	7.6	7.26
	25	8.4	7.25
	26	10.1	7.34
	27	10.3	7.52
	28	n/d	n/d
Mar-09	1	n/d	n/d
	2	n/d	n/d
	3	n/d	n/d
	4	n/d	n/d
	5	6.2	7.6
	6	9.4	6.92
	7	n/d	n/d
	8	n/d	n/d
	9	12.3	7.17
	10	11.2	7.33
	11	14.4	7
	12	10.9	7.13
	13	11.7	7
	14	n/d	n/d
	15	n/d	n/d
	16	11.2	6.9
	17	8.9	7.1
	18	12.3	7.8
	19	12.4	7.4
	20	10	7.4
	21	n/d	n/d
	22	n/d	n/d
	23	8.4	7.4
	24	10.7	7.1
	25	8	7.1
	26	12.2	7.9
	27	10.5	6.9
	28	n/d	n/d
	29	n/d	n/d
	30	12.6	7.7
	31	9.7	7.3

Month/ Year	Day	Temp °C	pH
Apr-09	1	10.8	7.04
	2	14.9	7.42
	3	13.5	7.81
	4	n/d	n/d
	5	n/d	n/d
	6	14.6	7.45
	7	14	7.14
	8	10.7	7.19
	9	14.5	7.67
	10	15.3	7.39
	11	n/d	n/d
	12	n/d	n/d
	13	n/d	n/d
	14	n/d	n/d
	15	n/d	n/d
	16	n/d	n/d
	17	n/d	n/d
	18	n/d	n/d
	19	n/d	n/d
	20	12.6	7.21
	21	14.3	7.01
	22	11.7	7.18
	23	14.1	7.86
	24	14.8	7.35
	25	n/d	n/d
	26	n/d	n/d
	27	16.9	7.56
	28	17.1	7.36
	29	17.4	7.41
	30	16.1	7.55
May-09	1	17	7.5
	2	n/d	n/d
	3	n/d	n/d
	4	15.8	7.23
	5	16.4	7.32
	6	18	7.25
	7	16.3	6.64
	8	18.8	7.67
	9	n/d	n/d
	10	n/d	n/d
	11	17.6	7.44
	12	17.7	7.76
	13	17.7	7.52
	14	18.9	7.49
	15	17.9	7

Month/ Year	Day	Temp °C	pH
May-09	16	n/d	n/d
	17	n/d	n/d
	18	17.4	7.43
	19	17.9	7.31
	20	17.8	7.45
	21	18.7	7.53
	22	19.5	7.23
	23	n/d	n/d
	24	n/d	n/d
	24	n/d	n/d
	25	n/d	n/d
	26	18.5	7.27
	27	19.4	7.09
	28	18.4	7.41
	29	21.3	7.43
	30	n/d	n/d
	31	n/d	n/d
Jun-09	1	20.3	7.25
	2	20.5	7.38
	3	20.8	7.12
	4	20.2	7.3
	5	18.7	6.6
	6	n/d	n/d
	7	n/d	n/d
	8	17.4	7.53
	9	22	7.24
	10	18.8	6.6
	11	21.4	6.68
	12	20	7.54
	13	n/d	n/d
	14	n/d	n/d
	15	n/d	n/d
	16	19.1	7.12
	17	n/d	n/d
	18	n/d	n/d
	19	n/d	n/d
	20	n/d	n/d
	21	n/d	n/d
	22	n/d	n/d
	23	n/d	n/d
	24	18.9	7.32
	25	19.6	6.92
	26	20.2	7.28
	27	n/d	n/d
	28	n/d	n/d
	29	n/d	n/d
	30	18.3	7.28

Month/ Year	Day	Temp °C	pH
Jul-09	1	n/d	n/d
	2	n/d	n/d
	3	n/d	n/d
	4	n/d	n/d
	5	n/d	n/d
	6	n/d	n/d
	7	n/d	n/d
	8	n/d	n/d
	9	n/d	n/d
	10	n/d	n/d
	11	n/d	n/d
	12	n/d	n/d
	13	n/d	n/d
	14	n/d	n/d
	15	n/d	n/d
	16	21.5	6.73
	17	21.2	6.25
	18	n/d	n/d
	19	n/d	n/d
	20	n/d	n/d
	21	n/d	n/d
	22	n/d	n/d
	23	n/d	n/d
	24	n/d	n/d
	25	n/d	n/d
	26	n/d	n/d
	27	n/d	n/d
	28	n/d	n/d
	29	n/d	n/d
	30	n/d	n/d
	31	n/d	n/d
Aug-09	1		
	2		
	3	n/d	n/d
	4	n/d	n/d
	5	n/d	n/d
	6	n/d	n/d
	7	n/d	n/d
	8		
	9		
	10	n/d	n/d
	11	n/d	n/d
	12	n/d	n/d
	13	n/d	n/d
	14	n/d	n/d
	15		
	16		

Month/ Year	Day	Temp °C	pH
Aug-09	17	n/d	n/d
	18	n/d	n/d
	19	n/d	n/d
	20	n/d	n/d
	21	21.2	8.91
	22		
	23		
	24	21.5	7.07
	25	24.7	7.52
	26	23.2	7.31
	27	24.7	7.05
	28	23.6	7.48
	29		
	30		
	31	22.9	6.96
Sep-09	1	21.3	7.17
	2	23.6	7.15
	3	22.2	7.38
	4	22	7.46
	5	n/d	n/d
	6	n/d	n/d
	7	n/d	n/d
	8	22.7	7.24
	9	23	7.32
	10	21	6.82
	11	19.9	7.7
	12	n/d	n/d
	13	n/d	n/d
	14	19.5	7.64
	15	20.6	6.99
	16	22.7	7.21
	17	22.6	6.9
	18	22.7	7.29
	19	n/d	n/d
	20	n/d	n/d
	21	21.4	7.38
	22	23.3	7.06
	23	24.9	7.52
	24	22.5	7.43
	25	22.3	7.39
	26	n/d	n/d
	27	n/d	n/d
	28	18.3	7.09
	29	21.2	7.14
	30	20.6	7.5
Oct-09	1	20.8	7.47
	2	19.8	7.32

Month/ Year	Day	Temp °C	pH
Oct-09	3	n/d	n/d
	4	n/d	n/d
	5	19.6	7.58
	6	22.9	7.05
	7	20.8	7.3
	8	18.5	7.17
	9	19.7	7.49
	10	n/d	n/d
	11	n/d	n/d
	12	15.8	7.59
	13	20	7.27
	14	16.5	7.45
	15	16.1	7.42
	16	16.6	7.09
	17	n/d	n/d
	18	n/d	n/d
	19	15.2	7.13
	20	16.6	7.28
	21	17.8	7.03
	22	18.1	7.17
	23	16.8	7.27
	24	n/d	n/d
	25	n/d	n/d
	26	16.5	7.34
	27	20	6.92
	28	17.5	7.11
	29	16.5	7.13
	30	16.4	7.18
	31	n/d	n/d
Nov-09	1	n/d	n/d
	2	n/d	n/d
	3	14.5	7.65
	4	16.7	7.5
	5	16.8	7.35
	6	16	7.36
	7	n/d	n/d
	8	n/d	n/d
	9	17	7.15
	10	17.4	7.39
	11	16	6.97
	12	15.2	7.09
	13	12.7	6.64
	14	n/d	n/d
	15	n/d	n/d
	16	15.8	7.99
	17	16.1	6.99
	18	16.9	6.75

Month/ Year	Day	Temp °C	pH
Nov-09	19	18.5	7.3
	20	15	7.37
	21	n/d	n/d
	22	n/d	n/d
	23	12.2	6.81
	24	15.8	7.12
	25	n/d	n/d
	26	n/d	n/d
	27	n/d	n/d
	28	n/d	n/d
	29	n/d	n/d
	30	14.9	6.97
Dec-09	1	11	7.62
	2	14.4	7.62
	3	14.4	7.12
	4	14.1	7.42
	5	n/d	n/d
	6	n/d	n/d
	7	13.7	6.95
	8	12.7	6.95
	9	11	6.81
	10	11.7	7.06
	11	100.8	7.18
	12	n/d	n/d
	13	n/d	n/d
	14	12.5	7.11
	15	13.4	7.27
	16	11.9	7.56
	17	11.3	7.42
	18	11.6	7.31
	19	n/d	n/d
	20	n/d	n/d
	21	n/d	n/d
	22	n/d	n/d
	23	n/d	n/d
	24	n/d	n/d
	25	n/d	n/d
	26	n/d	n/d
	27	n/d	n/d
	28	n/d	n/d
	29	n/d	n/d
	30	n/d	n/d
	31	n/d	n/d
Jan-10	1	n/d	n/d
	2	n/d	n/d
	3	n/d	n/d
	4	7.3	7.37

Month/ Year	Day	Temp °C	pH
Jan-10	5	7.7	6.79
	6	6.7	8.66
	7	6.8	7.16
	8	n/d	n/d
	9	n/d	n/d
	10	n/d	n/d
	11	6.4	7.34
	12	9.2	7.02
	13	9.2	7.17
	14	10.1	6.77
	15	8.8	7.37
	16	n/d	n/d
	17	n/d	n/d
	18	n/d	n/d
	19	10.5	7.46
	20	9.6	7.02
	21	10.3	7.21
	22	9.4	6.91
	23	n/d	n/d
	24	n/d	n/d
	25	n/d	n/d
	26	100.7	7.33
	27	8.2	6.91
	28	8.2	6.64
	29	9.2	6.79
	30	n/d	n/d
	31	n/d	n/d
Feb-10	1		
	2		
	3	n/d	n/d
	4	9.1	7.3
	5	n/d	n/d
	6		
	7		
	8		
	9		
	10		
	11	n/d	
	12	n/d	
	13		
	14	n/d	n/d
	15	n/d	n/d
	16	n/d	n/d
	17	7.9	8.6
	18	4.2	7.2
	19	7.4	7.4
	20		

Month/ Year	Day	Temp °C	pH
Feb-10	21	n/d	n/d
	22	7.1	7.3
	23	7.5	6.7
	24	7.7	7.4
	25	8.9	7.3
	26	6.9	6.8
	27		
	28	n/d	n/d
Mar-10	1	7.7	7.91
	2	8.9	7.06
	3	8.9	7.49
	4	7.9	7.5
	5	9.8	7.45
	6	n/d	n/d
	7	n/d	n/d
	8	9.8	7.41
	9	9.7	7.46
	10	11	7.36
	11	12.4	7.2
	12	12.9	7.1
	13		
	14	9.5	6.51
	15	11.6	7.68
	16	12.2	6.78
	17	13.2	7.41
	18	10.1	7.22
	19	13.4	7.28
	20		
	21	n/d	n/d
	22	13.1	8.43
	23	12.8	6.94
	24	14.4	7.21
	25	13.9	7.31
	26	13.6	6.87
	27		
	28	n/d	n/d
	29	12.7	6.83
	30	12	7.01
	31	11.7	7.2
Feb-10	1	7.24	14.8
	2	n/d	n/d
	3		
	4	n/d	n/d
	5	n/d	n/d
	6	n/d	n/d
	7	n/d	n/d
	8	n/d	n/d

Month/ Year	Day	Temp °C	pH
Feb-10	9	n/d	n/d
	10		
	11	n/d	n/d
	12	14.3	7.2
	13	14.1	7.19
	14	15.5	7.72
	15	14.8	7.51
	16	17.2	7.32
	17	n/d	n/d
	18	n/d	n/d
	19	15.1	7.61
	20	16.2	7.41
	21	13.2	7.4
	22	17.5	6.84
	23	13.1	7.16
	24		
	25	n/d	n/d
	26	13.7	6.83
	27	16.7	7.21
	28	16.3	7.04
	29	15.9	7.17
	30	17.6	7.33
May-10	1		
	2	n/d	n/d
	3	15.6	6.96
	4	17.3	7.43
	5	19.8	7.03
	6	18.3	7.56
	7	16	7.44
	8		
	9	n/d	n/d
	10	14.4	7.77
	11	18.5	7.37
	12	18.2	7.52
	13	18.7	7.37
	14	19	7.24
	15		
	16	n/d	n/d
	17	17.4	8.67
	18	18.1	7.6
	19	19.1	7.35
	20	20.1	6.91
	21	19.1	7.68
	22		
	23	n/d	n/d
	24	17.2	7.07
	25	20.2	7.53

Month/ Year	Day	Temp °C	pH
May-10	26	21.6	6.92
	27	21.5	7.2
	28	21.5	7.71
	29	n/d	n/d
	30	n/d	n/d
	31	n/d	n/d
Jun-10	1	23.7	7.9
	2	21.3	7.27
	3	21.6	7.27
	4	21.4	7.08
	5		
	6	n/d	n/d
	7	22.5	6.99
	8	18.4	7.47
	9	20.1	7.36
	10	22.8	7.51
	11	n/d	n/d
	12		
	13	n/d	n/d
	14	n/d	n/d
	15	n/d	n/d
	16	20.9	7.07
	17		
	18	n/d	n/d
	19		
	20	n/d	n/d
	21	n/d	n/d
	22	n/d	n/d
	23	n/d	n/d
	24	n/d	n/d
	25	n/d	n/d
	26		
	27	n/d	n/d
	28	n/d	n/d
	29	n/d	n/d
	30	n/d	n/d
Jul-10	1	n/d	n/d
	2	n/d	n/d
	3		
	4	n/d	n/d
	5	n/d	n/d
	6	n/d	n/d
	7	n/d	n/d
	8	n/d	n/d
	9	n/d	n/d
	10		
	11	n/d	n/d

Month/ Year	Day	Temp °C	pH
Jul-10	12	n/d	n/d
	13		
	14		
	15	n/d	n/d
	16	n/d	n/d
	17		
	18	n/d	n/d
	19	n/d	n/d
	20	n/d	n/d
	21	n/d	n/d
	22		
	23	n/d	n/d
	24		
	25	n/d	n/d
	26	n/d	n/d
	27	n/d	n/d
	28	n/d	n/d
	29	n/d	n/d
	30	n/d	n/d
	31		
Aug-10	1	n/d	n/d
	2	n/d	n/d
	3	n/d	n/d
	4	22.8	7.47
	5	n/d	n/d
	6	n/d	n/d
	7		
	8	n/d	n/d
	9	n/d	n/d
	10	n/d	n/d
	11	n/d	n/d
	12	n/d	n/d
	13	n/d	n/d
	14		
	15	n/d	n/d
	16	n/d	n/d
	17	n/d	n/d
	18	n/d	n/d
	19	21.2	7.86
	20	n/d	n/d
	21		
	22	n/d	n/d
	23	22.9	7.51
	24	22.9	7.37
	25	22.1	8.17
	26	21.9	7.74
	27	24.1	7.98

Month/ Year	Day	Temp °C	pH
Aug-10	28		
	29	n/d	n/d
	30	20.4	7.46
	31	24.6	7.03
Sep-10	1	23.8	7.45
	2	24.6	6.32
	3	25	6.73
	4		
	5	n/d	n/d
	6	n/d	n/d
	7	21.6	7.6
	8	22	7.64
	9	22.2	7.85
	10	22.1	7.48
	11		
	12	n/d	n/d
	13	19.3	7.39
	14	22.8	7.3
	15	22.1	7.24
	16	23.1	7.42
	17	22.3	7.56
	18		
	19	n/d	n/d
	20	19.8	7.32
	21	21.5	7.78
	22	22.2	7.72
	23	23.8	7.25
	24	21.4	7.55
	25		
	26	n/d	n/d
	27	21.3	7.75
	28	23.6	7.68
	29	22.5	7.56
	30	23.2	7.36
Oct-10	1	22.3	7.26
	2		
	3	n/d	n/d
	4	18	7.69
	5	20.4	7.06
	6	20	6.61
	7	19	7.52
	8	17.8	7.66
	9		
	10	n/d	n/d
	11	20.7	7.61
	12	20.9	7.53
	13	21	7.46

Month/ Year	Day	Temp °C	pH
Oct-10	14	20	7.03
	15	18.6	7.58
	16		
	17	n/d	n/d
	18	17.3	7.66
	19	18	7.31
	20	19.6	6.79
	21	18.4	6.96
	22	17.9	7.1
	23		
	24	n/d	n/d
	25	15.8	7.7
	26	19.7	7.42
	27	20.3	7.2
	28	17.9	6.73
	29	18.9	7.37
	30		
	31	n/d	n/d
Nov-10	1	n/d	n/d
	2	n/d	n/d
	3	14.7	7.42
	4	17.1	7.05
	5	15.9	7.04
	6		
	7	n/d	n/d
	8	12.4	7.65
	9	14.5	7.6
	10	14.3	7.55
	11	16.6	7.3
	12	15.5	7.61
	13	n/d	n/d
	14		
	15	12.9	7.66
	16	16.1	7.45
	17	16.9	7.45
	18	14.8	7.4
	19	15.7	7.49
	20	n/d	n/d
	21		
	22	16.5	7.37
	23	15.5	7.38
	24	n/d	n/d
	25	n/d	n/d
	26		
	27	n/d	n/d
	28		
	29	12.2	7.67

Month/ Year	Day	Temp °C	pH
Nov-10	30	11.2	7.38
Dec-10	1	16.4	7.3
	2	14.8	7.27
	3	14.2	7.47
	4	n/d	n/d
	5		
	6	12.6	7.32
	7	10.5	6.86
	8	11.8	7.11
	9	11.3	7.22
	10	13.4	7.19
	11		
	12	n/d	n/d
	13	9.8	7.54
	14	8.6	7.29
	15	10.6	7.43
	16	n/d	n/d
	17		
	18		
	19	n/d	n/d
	20	9.1	7.64
	21	7.6	7.69
	22		
	23		
	24	n/d	n/d
	25		
	26	n/d	n/d
	27		
	28	n/d	n/d
	29		
	30	n/d	n/d
	31		
Jan-11	1		
	2	n/d	n/d
	3	5.1	7.05
	4	10.6	7.57
	5	9.1	7.6
	6	10.3	7.34
	7	10.4	7.35
	8		
	9	n/d	n/d
	10	5.5	7.49
	11	9	7.38
	12	4.8	7.14
	13	9.2	7.22
	14		
	15		

Month/ Year	Day	Temp °C	pH
Jan-11	16	n/d	n/d
	17	n/d	n/d
	18	n/d	n/d
	19	8.9	7.54
	20	8.8	7.27
	21	6.7	7.04
	22		
	23	n/d	n/d
	24	4	7.09
	25	9.5	7.33
	26	8.4	7.65
	27	n/d	n/d
	28	7.8	7.8
	29		
	30	n/d	n/d
	31	5.4	7.17
Feb-11	1	n/d	n/d
	2	9.9	7.39
	3	9.6	7.28
	4	9.4	7.23
	5		
	6	n/d	n/d
	7	8.5	7.09
	8	7.9	7.41
	9	9.3	7.32
	10	n/d	n/d
	11	7.8	7.33
	12		
	13	n/d	n/d
	14	7.2	7.29
	15	8.9	7.66
	16	10	7.49
	17	10.9	7.6
	18	11.7	7.52
	19		
	20	n/d	n/d
	21	10.9	7.35
	22	8.5	7.26
	23	10.4	7.57
	24	10.7	7.23
	25	10.9	7.48
	26		
	27	n/d	n/d
	28	11.1	7.37
Mar-11	1	11.7	7.14
	2	11.8	7.27
	3	11.7	7.38

Month/ Year	Day	Temp °C	pH
Mar-11	4	10.9	7.49
	5		
	6	n/d	n/d
	7	9.8	6.97
	8	11.9	7.3
	9	9.2	6.49
	10	10.2	7.3
	11	10.7	6.95
	12		
	13	n/d	n/d
	14	12.1	7.35
	15	11.5	7.05
	16	12.6	6.67
	17	11.5	7.46
	18	13.4	7.48
	19		
	20	n/d	n/d
	21	10	7.01
	22	12.3	7.29
	23	15.2	7.19
	24	12.9	7.12
	25	n/d	n/d
	26		
	27	n/d	n/d
	28	10.5	7.36
	29	11.1	7.34
	30	10.7	7.09
	31	12.4	7.42
Apr-11	1	12	7.48
	2		
	3	n/d	n/d
	4	11.4	7.26
	5	12.8	7.28
	6	14.3	7.24
	7	14.7	7.45
	8	14.5	7.58
	9		
	10	n/d	n/d
	11	14.1	7.21
	12	15.7	7.61
	13	15.1	7.33
	14	11.5	6.4
	15	15.4	7.13
	16		
	17	n/d	n/d
	18	n/d	n/d
	19	n/d	n/d

Month/ Year	Day	Temp °C	pH
Apr-11	20	n/d	n/d
	21	n/d	n/d
	22	n/d	n/d
	23		
	24	n/d	n/d
	25	n/d	n/d
	26	15.8	7.48
	27	16.8	6.93
	28	16.2	6.49
	29	17.7	7.18
	30		
May-11	1	n/d	n/d
	2	15.7	7.56
	3	18	7.45
	4	17	6.95
	5	17.5	7.53
	6	16.1	7.44
	7		
	8	n/d	n/d
	9	17.5	7.58
	10	17.5	7.24
	11	16.9	7.27
	12	18.1	7.42
	13	18.3	7.32
	14		
	15	n/d	n/d
	16	17.5	7.2
	17	17.8	7.15
	18	19.7	7.14
	19	20	7.22
	20	18.6	7.54
	21		
	22	n/d	n/d
	23	20.1	7.52
	24	20.4	7.58
	25	21.4	7.56
	26	19.8	7.24
	27	22.3	7.34
	28		
	29	n/d	n/d
	30		
	31	20.8	6.98
Jun-11	1	23.4	7.27
	2	23.4	7.41
	3	22.7	7.41
	4		
	5	n/d	n/d

Month/ Year	Day	Temp °C	pH
Jun-11	6	18.2	7.3
	7	20.6	7.32
	8	20.8	7.49
	9	23.6	7.22
	10	23	7.57
	11	n/d	n/d
	12	n/d	n/d
	13	n/d	n/d
	14	n/d	n/d
	15	21.5	7.37
	16		
	17	n/d	n/d
	18		
	19	n/d	n/d
	20	21.5	7.18
	21	n/d	n/d
	22	n/d	n/d
	23	n/d	n/d
	24	n/d	n/d
	25		
	26	n/d	n/d
	27	21.4	7.38
	28	21.5	6.42
	29	n/d	n/d
	30	n/d	n/d
Jul-11	1		
	2		
	3		
	4		
	5	n/d	n/d
	6		
	7	n/d	n/d
	8		
	9		
	10	n/d	n/d
	11		
	12	n/d	n/d
	13		
	14	n/d	n/d
	15	n/d	n/d
	16		
	17	n/d	n/d
	18		
	19	n/d	n/d
	20		
	21		
	22	n/d	n/d

Month/ Year	Day	Temp °C	pH
Jul-11	23		
	24	n/d	n/d
	25		
	26	n/d	n/d
	27		
	28	n/d	n/d
	29		
	30		
	31	n/d	n/d
Aug-11	1	n/d	n/d
	2	n/d	n/d
	3	n/d	n/d
	4	n/d	n/d
	5	n/d	n/d
	6		
	7	n/d	n/d
	8	n/d	n/d
	9	n/d	n/d
	10	n/d	n/d
	11	n/d	n/d
	12	n/d	n/d
	13		
	14	n/d	n/d
	15	n/d	n/d
	16	n/d	n/d
	17		
	18	n/d	n/d
	19	n/d	n/d
	20		
	21	n/d	n/d
	22	21.3	7.1
	23	20.7	7.4
	24	n/d	n/d
	25	24.3	7.91
	26	24.5	7.92
	27		
	28	n/d	n/d
	29	22.2	7.76
	30	23.2	7.86
	31	23.2	7.62
Sep-11	1	23.7	7.63
	2	22.8	7.64
	3		
	4	n/d	n/d
	5	n/d	n/d
	6	22.2	7.38
	7	23	7.32

Month/ Year	Day	Temp °C	pH
Sep-11	8	22	7.22
	9	24	7.17
	10		
	11	n/d	n/d
	12	22.1	7.67
	13	22.2	7.53
	14	20.5	7.08
	15	22.4	7.54
	16	21.8	7.61
	17		
	18	n/d	n/d
	19	19.2	7.7
	20	21.2	7.68
	21	21.3	7.5
	22	22.8	7.51
	23	22.4	7.46
	24		
	25	n/d	n/d
	26	22.4	7.09
	27	22.8	7.36
	28	23.1	7.42
	29	23.1	7.39
	30	22.5	7.71
Oct-11	1		
	2	n/d	n/d
	3	19.2	7.64
	4	20.1	7.49
	5	20.7	7.47
	6	20.4	7.53
	7	19.9	7.64
	8		
	9	n/d	n/d
	10	19.9	7.46
	11	19.8	7.57
	12	19.3	7.49
	13	21.7	7.44
	14	20.8	7.21
	15		
	16	n/d	n/d
	17	18.7	7.27
	18	20.3	7.37
	19	20.1	7.35
	20	19.1	7.32
	21	18.6	7.56
	22		
	23	n/d	n/d
	24	18	7.58

Month/ Year	Day	Temp °C	pH
Oct-11	25	17.9	7.41
	26	19.8	7.28
	27	19.9	7.36
	28	14.4	7.1
	29		
	30	n/d	n/d
	31	14.3	7.63
Nov-11	1	14.5	7.61
	2	15.1	7.7
	3	16.7	7.37
	4	16.7	7.5
	5		
	6	n/d	n/d
	7	16.1	7.63
	8	n/d	n/d
	9	13.9	7.73
	10	14.9	7.32
	11	15.7	7.42
	12		
	13	n/d	n/d
	14	115.9	7.74
	15	16.2	7.96
	16	17	7.45
	17	15.8	7.55
	18	15.5	7.6
	19		
	20	n/d	n/d
	21	14.9	7.48
	22	16	7.55
	23	14.7	7.23
	24		
	25	n/d	n/d
	26		
	27	n/d	n/d
	28	14.7	7.83
	29	15.9	7.43
	30	15.6	7.61
Dec-11	1	15.2	7.61
	2	13.3	7.59
	3		
	4	n/d	n/d
	5	15.7	7.75
	6	15.8	7.72
	7	16.1	7.55
	8	11.1	6.6
	9	12	7.22
	10		

Month/ Year	Day	Temp °C	pH
Dec-11	11	n/d	n/d
	12	11.1	7.42
	13	10.4	7.49
	14	13.1	7.65
	15	13.5	8.16
	16	12.6	8.24
	17		
	18	n/d	n/d
	19	10.7	8.59
	20	12.4	7.59
	21	n/d	n/d
	22		
	23		
	24		
	25	n/d	n/d
	26		
	27	n/d	n/d
	28	n/d	n/d
	29	8.1	6.76
	30	n/d	n/d
	31		
Jan-12	1	n/d	n/d
	2	n/d	n/d
	3	9	7.18
	4	9.6	7.31
	5	8	6.95
	6	10.9	7.32
	7		
	8	n/d	n/d
	9	9.9	7.29
	10	8.8	6.96
	11	8.4	7.04
	12	9.6	6.49
	13	12.1	7.17
	14		
	15	n/d	n/d
	16		
	17	9	7.39
	18	10.8	7.58
	19	10.7	7.51
	20	10.7	7.51
	21		
	22	n/d	n/d
	23	6.6	6.59
	24	9.1	7.48
	25	10.9	7.77
	26	11.5	7.92

Month/ Year	Day	Temp °C	pH
Jan-12	27	12.7	8.1
	28		
	29	n/d	n/d
	30	7.5	6.87
	31	11.5	7.95
Feb-12	1	12.4	8.02
	2	13	7.54
	3	12	7.61
	4		
	5	n/d	n/d
	6	10.2	7.48
	7	11	8.91
	8	12.2	7.44
	9	11.7	7.29
	10	11.7	7.33
	11		
	12	n/d	n/d
	13	7.3	6.88
	14	10.4	7.3
	15	11.2	7.46
	16	11.4	7.6
	17	11.9	7.6
	18		
	19	n/d	n/d
	20		
	21	6.7	6.91
	22	11.4	7.55
	23	11.3	8.39
	24	11.9	7.45
	25		
	26	n/d	n/d
	27	8.7	6.8
	28	9.3	7.07
	29	10.2	7.33
Mar-12	1	13	7.07
	2	12.8	7.35
	3		
	4	n/d	n/d
	5	6.3	6.64
	6	9.2	8.78
	7	12.5	7.21
	8	13.3	7.33
	9	12.8	7.26
	10		
	11	n/d	n/d
	12	9	6.79

Month/ Year	Day	Temp °C	pH
Mar-12	13	12.5	8.89
	14	13.7	7.29
	15	14.9	7.26
	16	15.1	7.35
	17		
	18	n/d	n/d
	19	14.1	7.03
	20	14.8	7.19
	21	16.6	7.27
	22	17	7.32
	23	15.7	7.18
	24		
	25	n/d	n/d
	26	13.4	6.89
	27	14.4	7.7
	28	15.8	7.53
	29	15.8	7.58
	30	15.6	7.51
	31		
Apr-12	1	n/d	n/d
	2	14.9	7.46
	3	15.2	7.73
	4	14.3	7.3
	5	14.5	7.28
	6	n/d	n/d
	7		
	8	n/d	n/d
	9	11	6.44
	10	n/d	n/d
	11	n/d	n/d
	12	n/d	n/d
	13	n/d	n/d
	14		
	15	n/d	n/d
	16	13.7	7.35
	17	14.9	7.15
	18	16.4	7.38
	19	16.3	7.69
	20	16.9	7.43
	21		
	22	n/d	n/d
	23	11.6	6.75
	24	14.6	7.57
	25	14.6	7.46
	26	17.1	7.09
	27	17.1	7.31

Month/ Year	Day	Temp °C	pH
Apr-12	28		
	29	n/d	n/d
	30	15.2	7.37
May-12	1	16.5	7.68
	2	18.7	7.5
	3	19.1	7.41
	4	19.9	7.36
	5		
	6	n/d	n/d
	7	17.2	7.48
	8	16.9	7.6
	9	20.5	7.54
	10	19.7	7.43
	11	18.9	7.59
	12		
	13	n/d	n/d
	14	19.2	7.36
	15	17.9	7.04
	16	20.7	7.16
	17	21	7.16
	18	20	7.35
	19		
	20	n/d	n/d
	21	19.5	7.51
	22	20.3	7.53
	23	20.8	7.46
	24	21.3	7.22
	25	21.8	7.37
	26		
	27	n/d	n/d
	28	n/d	n/d
	29	20.3	7.52
	30	21.8	7.49
	31	21.5	7.54
Jun-12	1	22.6	7.7
	2		
	3	n/d	n/d
	4	19.8	7.65
	5	18.9	7.57
	6	20.9	7.54
	7	21.1	7.38
	8	18.2	7.15
	9		
	10	n/d	n/d
	11	18.8	7.12
	12	19.4	7.25

Month/ Year	Day	Temp °C	pH
Jun-12	13	n/d	n/d
	14	n/d	n/d
	15	n/d	n/d
	16		
	17		
	18	n/d	n/d
	19	n/d	n/d
	20	n/d	n/d
	21	n/d	n/d
	22		
	23		
	24	n/d	n/d
	25	n/d	n/d
	26	n/d	n/d
	27	n/d	n/d
	28	n/d	n/d
	29	n/d	n/d
	30	n/d	n/d
Jul-12	1	n/d	n/d
	2	n/d	n/d
	3	21.9	7.18
	4		
	5	22.5	7.11
	6	n/d	n/d
	7		
	8	n/d	n/d
	9	23.5	7.36
	10	n/d	n/d
	11	n/d	n/d
	12	n/d	n/d
	13	n/d	n/d
	14		
	15	n/d	n/d
	16	23.1	7.19
	17	23.2	7.18
	18	23.3	7.47
	19	n/d	n/d
	20		
	21		
	22	n/d	n/d
	23	n/d	n/d
	24	n/d	n/d
	25	n/d	n/d
	26		

Month/ Year	Day	Temp °C	pH
Jul-12	27	n/d	n/d
	28		
	29	n/d	n/d
	30	n/d	n/d
	31	n/d	n/d

Temperature 90th percentile = 22.2°

pH 90th percentile = 7.68 SU

Berkeley pH and Temperature Data - January 1999 - Jan 2002

Berkeley Es Effluent pH & Temp Data from 1/1/1999 to 1/31/2002

Berkeley Es Effluent pH & Temp Data from 1/1/1999 to 1/31/2002

COUNT	DATE	pH	pH-Sort	DATE	TEMP C	TEMP C-Sort
1	1/3/1999	6.9	6.0	1/3/1999	7	3
2	1/4/1999	6.5	6.0	1/4/1999	7	4
3	1/5/1999	6.8	6.0	1/5/1999	7	4
4	1/6/1999	6.9	6.0	1/6/1999	6	4
5	1/7/1999	6.9	6.0	1/7/1999	6	5
6	1/8/1999	6.5	6.0	1/8/1999	5	5
7	1/9/1999	9.0	6.0	1/9/1999	7	5
8	1/10/1999	8.8	6.0	1/10/1999	5	5
9	1/11/1999	9.0	6.0	1/11/1999	6	5
10	1/12/1999	6.8	6.0	1/12/1999	7	5
11	1/13/1999	6.5	6.1	1/13/1999	8	5
12	1/14/1999	6.8	6.1	1/14/1999	7	5
13	1/15/1999	7.5	6.1	1/15/1999	5	5
14	1/16/1999	7.4	6.1	1/16/1999	7	6
15	1/17/1999	8.1	6.1	1/17/1999	7	6
16	1/18/1999	8.0	6.1	1/18/1999	8	6
17	1/19/1999	7.4	6.1	1/19/1999	7	6
18	1/20/1999	6.6	6.1	1/20/1999	8	6
19	1/21/1999	8.0	6.1	1/21/1999	8	6
20	1/22/1999	7.8	6.1	1/22/1999	8	6
21	1/23/1999	7.4	6.1	1/23/1999	8	6
22	1/24/1999	6.3	6.1	1/24/1999	9	6
23	1/25/1999	6.4	6.1	1/25/1999	9	6
24	1/26/1999	8.4	6.1	1/26/1999	10	6
25	1/27/1999	7.5	6.1	1/27/1999	11	6
26	1/28/1999	7.3	6.2	1/28/1999	8	6
27	1/29/1999	7.5	6.2	1/29/1999	8	6
28	1/30/1999	8.5	6.2	1/30/1999	7	6
29	1/31/1999	8.0	6.2	1/31/1999	5	6
30	2/1/1999	6.3	6.2	2/1/1999	8	6
31	2/2/1999	6.7	6.2	2/2/1999	9	6
32	2/3/1999	7.4	6.2	2/3/1999	9	6
33	2/4/1999	7.8	6.2	2/4/1999	9	6
34	2/5/1999	6.7	6.2	2/5/1999	9	6
35	2/6/1999	8.9	6.2	2/6/1999	8	7
36	2/7/1999	8.9	6.2	2/7/1999	10	7
37	2/8/1999	7.2	6.2	2/8/1999	9	7
38	2/9/1999	7.5	6.2	2/9/1999	10	7
39	2/10/1999	7.2	6.2	2/10/1999	9	7
40	2/11/1999	7.8	6.2	2/11/1999	11	7
41	2/12/1999	6.2	6.2	2/12/1999	8	7
42	2/13/1999	8.2	6.2	2/13/1999	7	7
43	2/14/1999	8.5	6.2	2/14/1999	7	7
44	2/15/1999	6.2	6.2	2/15/1999	10	7
45	2/16/1999	7.3	6.2	2/16/1999	9	7
46	2/17/1999	6.1	6.2	2/17/1999	9	7
47	2/18/1999	6.7	6.3	2/18/1999	10	7
48	2/19/1999	6.5	6.3	2/19/1999	9	7
49	2/20/1999	8.4	6.3	2/20/1999	8	7
50	2/21/1999	8.7	6.3	2/21/1999	6	7
51	2/22/1999	6.9	6.3	2/22/1999	7	7
52	2/23/1999	6.3	6.3	2/23/1999	8	7
53	2/24/1999	8.6	6.3	2/24/1999	7	7
54	2/25/1999	8.3	6.3	2/25/1999	8	7
55	2/26/1999	7.1	6.3	2/26/1999	7	7
56	2/27/1999			2/27/1999		
57	2/28/1999	8.3	6.3	2/28/1999	8	7
58	2/29/1999	6.2	6.3	2/29/1999	9	7
59	2/30/1999	6.5	6.3	2/30/1999	10	7
60	3/1/1999	6.1	6.3	3/1/1999	10	7
61	3/2/1999	6.6	6.3	3/2/1999	9	7
62	3/3/1999	6.1	6.3	3/3/1999	10	7
63	3/4/1999	8.9	6.3	3/4/1999	6	7
64	3/5/1999	8.6	6.3	3/5/1999	6	7
65	3/6/1999	8.6	6.3	3/6/1999	6	7
66	3/7/1999	8.6	6.3	3/7/1999	6	7
67	3/8/1999	8.6	6.3	3/8/1999	6	7
68	3/9/1999	8.6	6.3	3/9/1999	6	7
69	3/10/1999	8.6	6.3	3/10/1999	6	7
70	3/11/1999	8.6	6.3	3/11/1999	6	7
71	3/12/1999	8.6	6.3	3/12/1999	6	7
72	3/13/1999	8.6	6.3	3/13/1999	6	7
73	3/14/1999	8.6	6.3	3/14/1999	6	7
74	3/15/1999	8.6	6.3	3/15/1999	6	7
75	3/16/1999	8.6	6.3	3/16/1999	6	7
76	3/17/1999	8.6	6.3	3/17/1999	6	7
77	3/18/1999	8.6	6.3	3/18/1999	6	7
78	3/19/1999	8.6	6.3	3/19/1999	6	7
79	3/20/1999	8.6	6.3	3/20/1999	6	7
80	3/21/1999	8.6	6.3	3/21/1999	6	7
81	3/22/1999	8.6	6.3	3/22/1999	6	7
82	3/23/1999	8.6	6.3	3/23/1999	6	7
83	3/24/1999	8.6	6.3	3/24/1999	6	7
84	3/25/1999	8.6	6.3	3/25/1999	6	7
85	3/26/1999	8.6	6.3	3/26/1999	6	7
86	3/27/1999	8.6	6.3	3/27/1999	6	7
87	3/28/1999	8.6	6.3	3/28/1999	6	7
88	3/29/1999	8.6	6.3	3/29/1999	6	7
89	3/30/1999	8.6	6.3	3/30/1999	6	7
90	3/31/1999	8.6	6.3	3/31/1999	6	7
91	4/1/1999	8.6	6.3	4/1/1999	6	7
92	4/2/1999	8.6	6.3	4/2/1999	6	7
93	4/3/1999	8.6	6.3	4/3/1999	6	7
94	4/4/1999	8.6	6.3	4/4/1999	6	7
95	4/5/1999	8.6	6.3	4/5/1999	6	7
96	4/6/1999	8.6	6.3	4/6/1999	6	7
97	4/7/1999	8.6	6.3	4/7/1999	6	7
98	4/8/1999	8.6	6.3	4/8/1999	6	7
99	4/9/1999	8.6	6.3	4/9/1999	6	7
100	4/10/1999	8.6	6.3	4/10/1999	6	7
101	4/11/1999	8.6	6.3	4/11/1999	6	7
102	4/12/1999	8.6	6.3	4/12/1999	6	7
103	4/13/1999	8.6	6.3	4/13/1999	6	7
104	4/14/1999	8.6	6.3	4/14/1999	6	7
105	4/15/1999	8.6	6.3	4/15/1999	6	7
106	4/16/1999	8.6	6.3	4/16/1999	6	7
107	4/17/1999	8.6	6.3	4/17/1999	6	7
108	4/18/1999	8.6	6.3	4/18/1999	6	7
109	4/19/1999	8.6	6.3	4/19/1999	6	7
110	4/20/1999	8.6	6.3	4/20/1999	6	7
111	4/21/1999	8.6	6.3	4/21/1999	6	7

Berkeley Es Effluent pH & Temp Data from 1/1/1999 to 1/31/2002

Berkeley Es Effluent pH & Temp Data from 1/1/1999 to 1/31/2002

112	4/26/1999	8.7	6.5	4/26/1999	13	8
113	4/27/1999	8.2	6.5	4/27/1999	16	8
114	4/28/1999	6.7	6.5	4/28/1999	15	8
115	4/29/1999	7.1	6.5	4/29/1999	16	8
116	4/30/1999	7.4	6.5	4/30/1999	14	8
117	5/1/1999	8.4	6.5	5/1/1999	10	9
118	5/2/1999	7.2	6.5	5/2/1999	11	9
119	5/3/1999	6.6	6.5	5/3/1999	15	9
120	5/4/1999	6.8	6.5	5/4/1999	17	9
121	5/5/1999	7.2	6.5	5/5/1999	17	9
122	5/6/1999	6.7	6.5	5/6/1999	15	9
123	5/7/1999	7.2	6.5	5/7/1999	16	9
124	5/8/1999	7.0	6.5	5/8/1999	16	9
125	5/9/1999	8.5	6.5	5/9/1999	15	9
126	5/10/1999	8.9	6.5	5/10/1999	17	9
127	5/11/1999	6.3	6.6	5/11/1999	19	9
128	5/12/1999	6.8	6.6	5/12/1999	19	9
129	5/13/1999	6.9	6.6	5/13/1999	18	9
130	5/14/1999	7.2	6.6	5/14/1999	16	9
131	5/15/1999	7.1	6.6	5/15/1999	14	9
132	5/16/1999	8.3	6.6	5/16/1999	16	9
133	5/17/1999	8.8	6.6	5/17/1999	16	9
134	5/18/1999	6.2	6.6	5/18/1999	18	9
135	5/19/1999	6.4	6.6	5/19/1999	18	9
136	5/20/1999	7.0	6.6	5/20/1999	18	9
137	5/21/1999	6.8	6.6	5/21/1999	17	9
138	5/22/1999	6.6	6.6	5/22/1999	16	9
139	5/23/1999	8.5	6.6	5/23/1999	17	9
140	5/24/1999	6.3	6.6	5/24/1999	20	9
141	5/25/1999	6.2	6.6	5/25/1999	18	9
142	5/26/1999	6.7	6.6	5/26/1999	20	9
143	5/27/1999	6.8	6.6	5/27/1999	20	9
144	5/28/1999	7.2	6.6	5/28/1999	19	9
145	5/29/1999	6.6	6.6	5/29/1999	18	9
146	5/30/1999	8.3	6.6	5/30/1999	20	9
147	5/31/1999	6.4	6.6	5/31/1999	22	9
148	6/1/1999	6.1	6.7	6/1/1999	21	9
149	6/2/1999	7.0	6.7	6/2/1999	20	9
150	6/3/1999	6.5	6.7	6/3/1999	18	9
151	6/4/1999	7.2	6.7	6/4/1999	18	9
152	6/5/1999	6.3	6.7	6/5/1999	22	9
153	6/6/1999	6.7	6.7	6/6/1999	23	9
154	6/7/1999	6.2	6.7	6/7/1999	22	9
155	6/8/1999	6.6	6.7	6/8/1999	21	9
156	6/9/1999	6.1	6.7	6/9/1999	20	9
157	6/10/1999	7.0	6.7	6/10/1999	21	9
158	6/11/1999	6.9	6.7	6/11/1999	21	9
159	6/12/1999	6.3	6.7	6/12/1999	23	9
160	6/13/1999	6.0	6.7	6/13/1999	24	9
161	6/14/1999	7.3	6.7	6/14/1999	22	9
162	6/15/1999	6.7	6.7	6/15/1999	23	9
163	6/16/1999	6.8	6.7	6/16/1999	22	9
164	6/17/1999	6.1	6.7	6/17/1999	20	9
165	6/18/1999	6.8	6.7	6/18/1999	22	9
166	6/19/1999	6.1	6.7	6/19/1999	22	9
167	6/20/1999	6.5	6.7	6/20/1999	21	9
168	9/18/1999	6.9	6.7	9/18/1999	19	9
169	9/19/1999	8.0	6.7	9/19/1999	18	9
170	9/20/1999	9.0	6.7	9/20/1999	20	9
171	9/21/1999	7.2	6.7	9/21/1999	20	9
172	9/22/1999	6.4	6.7	9/22/1999	18	10
173	9/23/1999	7.3	6.7	9/23/1999	17	10
174	9/24/1999	6.8	6.7	9/24/1999	17	10
175	9/25/1999	7.1	6.7	9/25/1999	18	10

Berkeley ES Effluent pH & Temp Data from 1/1/1999 to 1/31/2002

224	1/1/1999	6.8	6.8	11/19/1999	11	10
225	1/2/1999	7.0	6.8	11/22/1999	13	10
226	1/2/1999	6.3	6.8	11/23/1999	13	10
227	1/2/1999	6.1	6.8	11/27/1999	13	10
228	1/28/1999	6.7	6.8	11/28/1999	12	10
229	1/29/1999	6.2	6.8	11/29/1999	12	10
230	1/30/1999	6.1	6.8	11/30/1999	11	10
231	12/1/1999	7.4	6.8	12/1/1999	8	10
232	12/2/1999	7.2	6.8	12/2/1999	10	10
233	12/3/1999	7.2	6.9	12/3/1999	9	10
234	12/4/1999	7.0	6.9	12/4/1999	10	10
235	12/5/1999	6.8	6.9	12/5/1999	10	10
236	12/6/1999	6.9	6.9	12/6/1999	12	10
237	12/7/1999	6.4	6.9	12/7/1999	10	10
238	12/8/1999	6.7	6.9	12/8/1999	9	10
239	12/9/1999	6.3	6.9	12/9/1999	10	10
240	12/10/1999	7.1	6.9	12/10/1999	11	10
241	12/11/1999	6.6	6.9	12/11/1999	11	10
242	12/12/1999	7.2	6.9	12/12/1999	11	11
243	12/13/1999	7.8	6.9	12/13/1999	10	11
244	12/14/1999	6.0	6.9	12/14/1999	10	11
245	12/15/1999	6.3	6.9	12/15/1999	11	11
246	12/16/1999	6.5	6.9	12/16/1999	11	11
247	12/17/1999	7.4	6.9	12/17/1999	11	11
248	12/18/1999	7.9	6.9	12/18/1999	9	11
249	12/19/1999	8.6	6.9	12/19/1999	9	11
250	12/20/1999	8.9	6.9	12/20/1999	8	11
251	12/21/1999	6.2	6.9	12/21/1999	10	11
252	12/22/1999	6.8	6.9	12/22/1999	9	11
253	12/23/1999	7.1	6.9	12/23/1999	8	11
254	12/24/1999	6.5	6.9	12/24/1999	7	11
255	12/25/1999	7.3	6.9	12/25/1999	7	11
256	1/4/2000	7.0	6.9	1/4/2000	10	11
257	1/5/2000	6.3	6.9	1/5/2000	11	11
258	1/6/2000	6.5	6.9	1/6/2000	9	11
259	1/7/2000	9.8	6.9	1/7/2000	8	11
260	1/8/2000	6.8	6.9	1/8/2000	9	11
261	1/9/2000	7.3	6.9	1/9/2000	10	11
262	1/10/2000	6.5	6.9	1/10/2000	11	11
263	1/11/2000	6.6	6.9	1/11/2000	9	11
264	1/12/2000	6.8	6.9	1/12/2000	8	11
265	1/13/2000	6.8	6.9	1/13/2000	9	11
266	1/14/2000	7.5	6.9	1/14/2000	6	11
267	1/15/2000	7.2	6.9	1/15/2000	4	11
268	1/16/2000	8.5	6.9	1/16/2000	7	11
269	1/17/2000	7.9	6.9	1/17/2000	7	11
270	1/18/2000	7.6	6.9	1/18/2000	4	11
271	1/19/2000	6.6	6.9	1/19/2000	7	11
272	1/20/2000	6.6	6.9	1/20/2000	6	11
273	1/22/2000	6.7	6.9	1/22/2000	4	11
274	1/23/2000	7.4	7.0	1/23/2000	6	11
275	1/24/2000	8.8	7.0	1/24/2000	5	11
276	1/25/2000	7.4	7.0	1/25/2000	5	11
277	1/31/2000	6.4	7.0	1/31/2000	6	11
278	2/1/2000	6.2	7.0	2/1/2000	6	11
279	2/2/2000	6.4	7.0	2/2/2000	6	11

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280	2/3/2000	6.6	7.0	2/3/2000	6	11
281	2/4/2000	6.3	7.0	2/4/2000	8	11
282	2/5/2000	8.4	7.0	2/5/2000	7	11
283	2/6/2000	6.2	7.0	2/6/2000	7	11
284	2/7/2000	7.4	7.0	2/7/2000	6	11
285	2/8/2000	6.7	7.0	2/8/2000	7	11
286	2/9/2000	7.1	7.0	2/9/2000	6	11
287	2/10/2000	7.2	7.0	2/10/2000	7	11
288	2/11/2000	8.3	7.0	2/11/2000	7	11
289	2/12/2000	6.5	7.0	2/12/2000	9	11
290	2/13/2000	8.8	7.0	2/13/2000	8	11
291	2/14/2000	7.4	7.0	2/14/2000	7	11
292	2/15/2000	6.6	7.0	2/15/2000	7	11
293	2/16/2000	7.1	7.0	2/16/2000	7	11
294	2/17/2000	7.3	7.0	2/17/2000	6	11
295	2/18/2000	8.0	7.0	2/18/2000	7	11
296	2/19/2000	7.2	7.0	2/19/2000	9	11
297	2/20/2000	7.2	7.0	2/20/2000	7	11
298	2/21/2000	7.4	7.0	2/21/2000	7	11
299	2/22/2000	6.7	7.0	2/22/2000	8	11
300	2/23/2000	6.8	7.0	2/23/2000	8	11
301	2/24/2000	7.5	7.0	2/24/2000	8	11
302	2/25/2000	7.4	7.0	2/25/2000	9	11
303	2/26/2000	7.3	7.0	2/26/2000	10	11
304	2/27/2000	8.1	7.0	2/27/2000	11	12
305	2/28/2000	6.4	7.0	2/28/2000	9	12
306	3/1/2000	6.7	7.0	3/1/2000	10	12
307	3/2/2000	7.1	7.0	3/2/2000	10	12
308	3/3/2000	7.3	7.0	3/3/2000	9	12
309	3/4/2000	7.8	7.0	3/4/2000	9	12
310	3/5/2000	8.6	7.0	3/5/2000	8	12
311	3/6/2000	8.7	7.0	3/6/2000	8	12
312	3/7/2000	6.5	7.0	3/7/2000	10	12
313	3/8/2000	6.6	7.0	3/8/2000	10	12
314	3/9/2000	6.9	7.0	3/9/2000	10	12
315	3/10/2000	7.3	7.0	3/10/2000	11	12
316	3/11/2000	7.3	7.0	3/11/2000	13	12
317	3/12/2000	8.7	7.0	3/12/2000	13	12
318	3/13/2000	7.1	7.0	3/13/2000	7	12
319	3/14/2000	6.8	7.0	3/14/2000	11	12
320	3/15/2000	6.6	7.0	3/15/2000	10	12
321	3/16/2000	6.9	7.1	3/16/2000	11	12
322	3/17/2000	7.0	7.1	3/17/2000	12	12
323	3/18/2000	6.7	7.1	3/18/2000	10	12
324	3/19/2000	6.5	7.1	3/19/2000	10	12
325	3/20/2000	7.3	7.1	3/20/2000	11	12
326	3/21/2000	6.0	7.1	3/21/2000	11	12
327	3/22/2000	6.3	7.1	3/22/2000	11	12
328	3/23/2000	6.5	7.1	3/23/2000	11	12
329	3/24/2000	6.7	7.1	3/24/2000	11	12
330	3/25/2000	7.6	7.1	3/25/2000	12	12
331	3/26/2000	7.5	7.1	3/26/2000	12	12
332	3/27/2000	7.4	7.1	3/27/2000	11	12
333	3/28/2000	6.1	7.1	3/28/2000	12	12
334	3/29/2000	6.3	7.1	3/29/2000	12	12
335	3/30/2000	7.4	7.1	3/30/2000	12	12

Berkeley ES Effluent pH & Temp Data from 1/1/1999 to 1/31/2002

336	3/31/2000	7.4	7.1	3/31/2000	11	12
337	4/1/2000	7.4	7.1	4/1/2000	12	12
338	4/2/2000	8.2	7.1	4/2/2000	14	12
339	4/3/2000	7.0	7.1	4/3/2000	15	12
340	4/4/2000	6.8	7.1	4/4/2000	14	12
341	4/5/2000	7.8	7.1	4/5/2000	13	12
342	4/6/2000	6.6	7.1	4/6/2000	14	12
343	4/7/2000	7.1	7.1	4/7/2000	13	12
344	4/8/2000	7.4	7.1	4/8/2000	14	12
345	4/9/2000	6.9	7.1	4/9/2000	13	12
346	4/10/2000	6.8	7.1	4/10/2000	13	12
347	4/11/2000	7.2	7.1	4/11/2000	14	13
348	4/12/2000	8.7	7.1	4/12/2000	13	13
349	4/13/2000	7.4	7.1	4/13/2000	12	13
350	4/14/2000	7.2	7.1	4/14/2000	12	13
351	4/15/2000	7.1	7.1	4/15/2000	15	13
352	4/16/2000	7.0	7.1	4/16/2000	15	13
353	4/17/2000	7.1	7.1	4/17/2000	14	13
354	4/18/2000	6.1	7.1	4/18/2000	14	13
355	4/19/2000	6.3	7.1	4/19/2000	14	13
356	4/20/2000	7.2	7.1	4/20/2000	13	13
357	4/21/2000	7.4	7.1	4/21/2000	14	13
358	4/22/2000	7.0	7.1	4/22/2000	14	13
359	4/23/2000	7.4	7.1	4/23/2000	14	13
360	4/24/2000	8.4	7.1	4/24/2000	14	13
361	4/25/2000	6.1	7.1	4/25/2000	14	13
362	4/26/2000	6.4	7.1	4/26/2000	13	13
363	4/27/2000	6.8	7.1	4/27/2000	13	13
364	4/28/2000	7.3	7.1	4/28/2000	13	13
365	4/29/2000	8.6	7.1	4/29/2000	13	13
366	4/30/2000	8.5	7.1	4/30/2000	13	13
367	5/1/2000	6.1	7.1	5/1/2000	14	13
368	5/2/2000	7.2	7.1	5/2/2000	16	13
369	5/3/2000	6.9	7.1	5/3/2000	16	13
370	5/4/2000	8.0	7.1	5/4/2000	18	13
371	5/5/2000	7.5	7.1	5/5/2000	15	13
372	5/6/2000	7.3	7.1	5/6/2000	17	13
373	5/7/2000	7.7	7.1	5/7/2000	17	13
374	5/8/2000	8.3	7.1	5/8/2000	17	13
375	5/9/2000	6.2	7.2	5/9/2000	19	13
376	5/10/2000	6.1	7.2	5/10/2000	20	13
377	5/11/2000	8.8	7.2	5/11/2000	19	13
378	5/12/2000	8.9	7.2	5/12/2000	18	13
379	5/13/2000	7.8	7.2	5/13/2000	19	13
380	5/14/2000	8.8	7.2	5/14/2000	19	13
381	5/15/2000	8.3	7.2	5/15/2000	18	13
382	5/16/2000	6.4	7.2	5/16/2000	19	13
383	5/17/2000	6.4	7.2	5/17/2000	20	13
384	5/18/2000	6.7	7.2	5/18/2000	20	13
385	5/19/2000	7.9	7.2	5/19/2000	19	13
386	5/20/2000	6.8	7.2	5/20/2000	18	13
387	5/21/2000	7.1	7.2	5/21/2000	18	13
388	5/22/2000	6.0	7.2	5/22/2000	19	13
389	5/23/2000	6.6	7.2	5/23/2000	18	13
390	5/24/2000	6.9	7.2	5/24/2000	20	14
391	5/25/2000	7.2	7.2	5/25/2000	20	14

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392	5/26/2000	8.3	7.2	5/26/2000	20	14
393	5/27/2000	7.2	7.2	5/27/2000	19	14
394	5/28/2000	8.7	7.2	5/28/2000	16	14
395	5/29/2000	6.8	7.2	5/29/2000	18	14
396	5/30/2000	8.7	7.2	5/30/2000	17	14
397	5/31/2000	7.4	7.2	5/31/2000	17	14
398	6/1/2000	6.5	7.2	6/1/2000	18	14
399	6/2/2000	6.9	7.2	6/2/2000	22	14
400	6/3/2000	7.0	7.2	6/3/2000	21	14
401	6/4/2000	8.5	7.2	6/4/2000	20	14
402	6/5/2000	8.6	7.2	6/5/2000	18	14
403	6/6/2000	6.3	7.2	6/6/2000	19	14
404	6/7/2000	7.4	7.2	6/7/2000	19	14
405	6/8/2000	6.4	7.2	6/8/2000	21	14
406	6/9/2000	6.6	7.2	6/9/2000	19	14
407	6/10/2000	7.4	7.2	6/10/2000	20	14
408	6/11/2000	8.3	7.2	6/11/2000	21	14
409	6/12/2000	8.8	7.2	6/12/2000	22	14
410	6/13/2000	6.6	7.2	6/13/2000	21	14
411	6/14/2000	6.8	7.2	6/14/2000	21	14
412	6/15/2000	7.4	7.2	6/15/2000	21	14
413	6/16/2000	6.3	7.2	6/16/2000	20	14
414	6/17/2000	7.1	7.2	6/17/2000	21	14
415	6/18/2000	6.7	7.2	6/18/2000	22	14
416	6/19/2000	7.1	7.2	6/19/2000	21	14
417	6/20/2000	7.3	7.2	6/20/2000	21	14
418	6/21/2000	8.2	7.2	6/21/2000	21	14
419	6/22/2000	7.4	7.2	6/22/2000	22	14
420	6/23/2000	7.4	7.2	6/23/2000	20	14
421	6/24/2000	7.6	7.2	6/24/2000	21	14
422	6/25/2000	6.3	7.2	6/25/2000	22	15
423	6/26/2000	6.6	7.2	6/26/2000	22	15
424	6/30/2000	6.9	7.2	6/30/2000	22	15
425	7/1/2000	6.3	7.2	7/1/2000	20	15
426	7/2/2000	6.7	7.2	7/2/2000	20	15
427	7/3/2000	8.5	7.2	7/3/2000	21	15
428	7/4/2000	8.8	7.2	7/4/2000	21	15
429	7/5/2000	6.9	7.2	7/5/2000	22	15
430	7/6/2000	8.7	7.2	7/6/2000	21	15
431	7/12/2000	6.2	7.2	7/12/2000	20	15
432	7/24/2000	6.8	7.2	7/24/2000	20	15
433	7/26/2000	9.0	7.2	7/26/2000	20	15
434	7/29/2000	6.0	7.2	7/29/2000	21	15
435	7/30/2000	7.1	7.3	7/30/2000	22	15
436	7/31/2000	6.4	7.3	7/31/2000	22	15
437	8/3/2000	6.3	7.3	8/3/2000	22	15
438	8/4/2000	6.3	7.3	8/4/2000	22	15
439	8/5/2000	6.2	7.3	8/5/2000	22	15
440	8/6/2000	8.3	7.3	8/6/2000	22	15
441	8/14/2000	7.0	7.3	8/14/2000	20	15
442	8/19/2000	6.2	7.3	8/19/2000	20	15
443	9/1/2000	6.7	7.3	9/1/2000	22	15
444	9/2/2000	5.5	7.3	9/2/2000	22	15
445	9/3/2000	7.0	7.3	9/3/2000	22	15
446	9/4/2000	6.8	7.3	9/4/2000	22	15
447	9/5/2000	6.3	7.3	9/5/2000	21	15

448	9/8/2000	6.7	7.3	9/8/2000	20	15	504	12/7/2000	7.3	7.4	12/7/2000	10	16
449	9/9/2000	6.8	7.3	9/9/2000	20	15	505	12/8/2000	7.4	7.4	12/8/2000	10	17
450	9/11/2000	6.6	7.3	9/11/2000	21	15	506	12/9/2000	7.3	7.4	12/9/2000	6	17
451	9/12/2000	6.0	7.3	9/12/2000	22	15	507	12/11/2000	7.2	7.4	12/11/2000	7	17
452	9/13/2000	7.4	7.3	9/13/2000	22	15	508	12/12/2000	7.2	7.4	12/12/2000	11	17
453	9/14/2000	6.9	7.3	9/14/2000	23	15	509	12/13/2000	7.5	7.4	12/13/2000	6	17
454	9/15/2000	7.0	7.3	9/15/2000	21	15	510	12/14/2000	7.2	7.4	12/14/2000	10	17
455	9/16/2000	6.8	7.3	9/16/2000	18	15	511	12/15/2000	7.2	7.4	12/15/2000	9	17
456	9/26/2000	6.0	7.3	9/26/2000	19	15	512	12/16/2000	7.3	7.4	12/16/2000	11	17
457	9/27/2000	6.6	7.3	9/27/2000	18	15	513	12/17/2000	6.9	7.4	12/17/2000	12	17
458	9/28/2000	7.3	7.3	9/28/2000	18	15	514	12/18/2000	6.3	7.4	12/18/2000	10	17
459	9/29/2000	8.0	7.3	9/29/2000	16	15	515	12/19/2000	7.1	7.4	12/19/2000	12	17
460	9/30/2000	6.6	7.3	9/30/2000	15	15	516	12/20/2000	7.0	7.4	12/20/2000	10	17
461	10/1/2000	6.9	7.3	10/1/2000	16	15	517	1/2/2001	7.5	7.4	1/2/2001	8	17
462	10/2/2000	8.4	7.3	10/2/2000	20	15	518	1/3/2001	7.1	7.4	1/3/2001	6	17
463	10/3/2000	7.9	7.3	10/3/2000	20	15	519	1/4/2001	7.2	7.4	1/4/2001	7	17
464	10/4/2000	8.3	7.3	10/4/2000	18	16	520	1/5/2001	7.2	7.4	1/5/2001	7	17
465	10/5/2000	8.0	7.3	10/5/2000	19	16	521	1/6/2001	7.5	7.4	1/6/2001	7	17
466	10/6/2000	7.9	7.3	10/6/2000	20	16	522	1/9/2001	7.1	7.4	1/9/2001	8	17
467	10/10/2000	7.5	7.3	10/10/2000	16	16	523	1/10/2001	7.1	7.4	1/10/2001	8	17
468	10/11/2000	6.8	7.3	10/11/2000	18	16	524	1/11/2001	7.7	7.4	1/11/2001	7	17
469	10/12/2000	8.8	7.3	10/12/2000	14	16	525	1/12/2001	7.8	7.4	1/12/2001	7	17
470	10/13/2000	7.9	7.3	10/13/2000	15	16	526	1/16/2001	7.5	7.4	1/16/2001	8	17
471	10/16/2000	7.6	7.3	10/16/2000	15	16	527	1/17/2001	7.6	7.4	1/17/2001	7	17
472	10/17/2000	7.2	7.3	10/17/2000	19	16	528	1/18/2001	7.2	7.4	1/18/2001	9	17
473	10/18/2000	7.3	7.3	10/18/2000	18	16	529	1/19/2001	7.1	7.4	1/19/2001	11	17
474	10/19/2000	7.5	7.3	10/19/2000	15	16	530	1/20/2001	6.4	7.4	1/20/2001	11	17
475	10/20/2000	7.5	7.3	10/20/2000	18	16	531	1/21/2001	6.5	7.4	1/21/2001	9	17
476	10/23/2000	7.5	7.3	10/23/2000	15	16	532	1/22/2001	7.1	7.4	1/22/2001	10	17
477	10/24/2000	7.4	7.3	10/24/2000	18	16	533	1/23/2001	7.3	7.4	1/23/2001	8	17
478	10/25/2000	7.4	7.3	10/25/2000	18	16	534	1/24/2001	7.3	7.4	1/24/2001	8	17
479	10/26/2000	7.2	7.3	10/26/2000	17	16	535	1/25/2001	7.2	7.4	1/25/2001	7	17
480	10/27/2000	7.6	7.3	10/27/2000	18	16	536	1/26/2001	7.1	7.4	1/26/2001	5	17
481	10/30/2000	7.4	7.3	10/30/2000	15	16	537	1/27/2001	6.9	7.4	1/27/2001	8	17
482	10/31/2000	7.4	7.3	10/31/2000	17	16	538	1/28/2001	6.7	7.4	1/28/2001	7	17
483	11/1/2000	7.4	7.3	11/1/2000	16	16	539	1/29/2001	7.4	7.4	1/29/2001	8	17
484	11/2/2000	7.3	7.3	11/2/2000	16	16	540	1/30/2001	7.2	7.4	1/30/2001	9	17
485	11/3/2000	7.3	7.3	11/3/2000	16	16	541	1/31/2001	7.2	7.4	1/31/2001	9	17
486	11/6/2000	7.3	7.3	11/6/2000	13	16	542	2/1/2001	9.6	7.4	2/1/2001	10	17
487	11/8/2000	7.6	7.3	11/8/2000	16	16	543	2/2/2001	6.7	7.4	2/2/2001	11	17
488	11/9/2000	7.3	7.3	11/9/2000	16	16	544	2/5/2001	7.4	7.4	2/5/2001	10	17
489	11/10/2000	7.3	7.3	11/10/2000	15	16	545	2/6/2001	7.1	7.4	2/6/2001	9	17
490	11/13/2000	7.1	7.3	11/13/2000	16	16	546	2/7/2001	7.4	7.4	2/7/2001	9	17
491	11/14/2000	7.7	7.3	11/14/2000	16	16	547	2/8/2001	7.3	7.4	2/8/2001	9	17
492	11/15/2000	7.6	7.4	11/15/2000	15	16	548	2/9/2001	7.3	7.4	2/9/2001	11	17
493	11/16/2000	7.4	7.4	11/16/2000	14	16	549	2/12/2001	7.5	7.4	2/12/2001	7	18
494	11/17/2000	7.5	7.4	11/17/2000	15	16	550	2/13/2001	7.1	7.4	2/13/2001	10	18
495	11/18/2000	7.7	7.4	11/18/2000	11	16	551	2/14/2001	7.1	7.5	2/14/2001	11	18
496	11/20/2000	7.6	7.4	11/20/2000	10	16	552	2/15/2001	7.0	7.5	2/15/2001	10	18
497	11/21/2000	7.3	7.4	11/21/2000	13	16	553	2/16/2001	7.1	7.5	2/16/2001	11	18
498	11/22/2000	7.3	7.4	11/22/2000	11	16	554	2/17/2001	7.0	7.5	2/17/2001	11	18
499	11/23/2000	7.1	7.4	11/23/2000	13	16	555	2/18/2001	6.8	7.5	2/18/2001	10	18
500	12/1/2000	7.2	7.4	12/1/2000	10	16	556	2/19/2001	6.3	7.5	2/19/2001	5	18
501	12/4/2000	7.4	7.4	12/4/2000	6	16	557	2/20/2001	7.6	7.5	2/20/2001	10	18
502	12/5/2000	7.4	7.4	12/5/2000	11	16	558	2/21/2001	7.2	7.5	2/21/2001	10	18
503	12/6/2000	7.1	7.4	12/6/2000	10	16	559	2/22/2001	6.9	7.5	2/22/2001	5	18

560	2/24/2001	6.5	7.5	2/24/2001	7	18	616	5/1/2001	7.6	7.7	5/1/2001	17	19
561	2/25/2001	7.0	7.5	2/25/2001	7	18	617	5/2/2001	7.7	7.7	5/2/2001	18	19
562	2/26/2001	7.3	7.5	2/26/2001	9	18	618	5/3/2001	7.7	7.7	5/3/2001	18	19
563	2/27/2001	7.3	7.5	2/27/2001	10	18	619	5/4/2001	7.4	7.7	5/4/2001	19	19
564	2/28/2001	7.1	7.5	2/28/2001	10	18	620	5/7/2001	7.8	7.7	5/7/2001	16	18
565	3/1/2001	6.7	7.5	3/1/2001	7	18	621	5/8/2001	7.6	7.7	5/8/2001	19	19
566	3/2/2001	7.3	7.5	3/2/2001	7	18	622	5/9/2001	7.5	7.7	5/9/2001	17	19
567	3/3/2001	6.5	7.5	3/3/2001	9	18	623	5/10/2001	7.5	7.7	5/10/2001	17	19
568	3/4/2001	6.6	7.5	3/4/2001	9	18	624	5/11/2001	7.4	7.7	5/11/2001	18	19
569	3/5/2001	7.4	7.5	3/5/2001	11	18	625	5/14/2001	7.9	7.7	5/14/2001	17	19
570	3/6/2001	7.2	7.5	3/6/2001	9	18	626	5/15/2001	7.5	7.7	5/15/2001	18	19
571	3/7/2001	7.4	7.5	3/7/2001	10	18	627	5/16/2001	7.7	7.7	5/16/2001	18	19
572	3/8/2001	7.3	7.5	3/8/2001	9	18	628	5/17/2001	7.7	7.8	5/17/2001	17	19
573	3/9/2001	7.2	7.5	3/9/2001	10	18	629	5/18/2001	7.4	7.8	5/18/2001	16	19
574	3/12/2001	7.8	7.5	3/12/2001	9	18	630	5/19/2001	7.5	7.8	5/19/2001	17	19
575	3/13/2001	7.5	7.5	3/13/2001	11	18	631	5/20/2001	6.7	7.8	5/20/2001	16	19
576	3/14/2001	7.5	7.5	3/14/2001	11	18	632	5/21/2001	7.9	7.8	5/21/2001	18	19
577	3/15/2001	7.3	7.5	3/15/2001	11	18	633	5/22/2001	7.0	7.8	5/22/2001	19	19
578	3/16/2001	7.0	7.5	3/16/2001	10	18	634	5/23/2001	6.4	7.8	5/23/2001	15	19
579	3/17/2001	7.0	7.5	3/17/2001	11	18	635	5/24/2001	7.5	7.8	5/24/2001	19	19
580	3/18/2001	7.0	7.5	3/18/2001	10	18	636	5/25/2001	7.8	7.8	5/25/2001	19	19
581	3/19/2001	6.9	7.5	3/19/2001	6	18	637	5/26/2001	6.3	7.8	5/26/2001	18	20
582	3/20/2001	7.2	7.5	3/20/2001	11	18	638	5/27/2001	6.4	7.8	5/27/2001	17	20
583	3/21/2001	7.2	7.5	3/21/2001	10	18	639	5/28/2001	7.0	7.8	5/28/2001	17	20
584	3/22/2001	6.4	7.5	3/22/2001	10	18	640	5/29/2001	7.8	7.8	5/29/2001	19	20
585	3/23/2001	7.3	7.5	3/23/2001	12	18	641	5/30/2001	7.5	7.8	5/30/2001	18	20
586	3/24/2001	6.8	7.5	3/24/2001	13	18	642	5/31/2001	7.6	7.8	5/31/2001	17	20
587	3/25/2001	7.0	7.5	3/25/2001	13	18	643	6/1/2001	7.2	7.8	6/1/2001	18	20
588	3/26/2001	7.6	7.5	3/26/2001	11	18	644	6/2/2001	6.8	7.9	6/2/2001	18	20
589	3/27/2001	7.3	7.6	3/27/2001	11	18	645	6/3/2001	7.0	7.9	6/3/2001	18	20
590	3/28/2001	7.4	7.6	3/28/2001	10	18	646	6/4/2001	6.5	7.9	6/4/2001	16	20
591	3/29/2001	7.4	7.6	3/29/2001	10	18	647	6/5/2001	7.4	7.9	6/5/2001	20	20
592	3/30/2001	7.0	7.6	3/30/2001	11	18	648	6/6/2001	7.6	7.9	6/6/2001	20	20
593	3/31/2001	6.3	7.6	3/31/2001	12	18	649	6/7/2001	6.7	7.9	6/7/2001	19	20
594	4/1/2001	7.0	7.6	4/1/2001	12	18	650	6/8/2001	7.4	7.9	6/8/2001	21	20
595	4/2/2001	7.3	7.6	4/2/2001	12	18	651	6/9/2001	7.2	7.9	6/9/2001	21	20
596	4/3/2001	7.2	7.6	4/3/2001	12	18	652	6/10/2001	7.2	7.9	6/10/2001	21	20
597	4/4/2001	7.3	7.6	4/4/2001	11	18	653	6/11/2001	7.1	7.9	6/11/2001	18	20
598	4/5/2001	7.3	7.6	4/5/2001	13	18	654	6/12/2001	7.2	7.9	6/12/2001	22	20
599	4/6/2001	7.2	7.6	4/6/2001	14	18	655	6/13/2001	7.7	7.9	6/13/2001	23	20
600	4/7/2001	7.2	7.6	4/7/2001	15	18	656	6/14/2001	7.8	7.9	6/14/2001	21	20
601	4/8/2001	7.0	7.6	4/8/2001	14	18	657	6/15/2001	7.5	8.0	6/15/2001	21	20
602	4/9/2001	6.8	7.6	4/9/2001	12	19	658	6/16/2001	7.4	8.0	6/16/2001	21	20
603	4/10/2001	7.3	7.6	4/10/2001	16	19	659	6/17/2001	8.0	8.0	6/17/2001	20	20
604	4/11/2001	6.9	7.6	4/11/2001	14	19	660	6/25/2001	7.3	8.0	6/25/2001	19	20
605	4/12/2001	7.2	7.6	4/12/2001	15	19	661	9/5/2001	7.5	8.0	9/5/2001	21	20
606	4/14/2001	7.5	7.6	4/14/2001	11	19	662	9/6/2001	7.3	8.0	9/6/2001	22	20
607	4/15/2001	6.8	7.6	4/15/2001	12	19	663	9/7/2001	7.3	8.0	9/7/2001	21	20
608	4/16/2001	7.2	7.6	4/16/2001	11	19	664	9/10/2001	7.5	8.0	9/10/2001	21	20
609	4/17/2001	6.9	7.6	4/17/2001	12	19	665	9/11/2001	7.7	8.0	9/11/2001	20	20
610	4/23/2001	7.5	7.6	4/23/2001	17	19	666	9/12/2001	6.5	8.1	9/12/2001	21	20
611	4/24/2001	7.5	7.6	4/24/2001	17	19	667	9/13/2001	7.0	8.1	9/13/2001	21	20
612	4/25/2001	7.0	7.6	4/25/2001	12	19	668	9/14/2001	7.4	8.2	9/14/2001	21	20
613	4/26/2001	6.9	7.6	4/26/2001	11	19	669	9/17/2001	7.7	8.2	9/17/2001	17	20
614	4/27/2001	7.1	7.6	4/27/2001	12	19	670	9/18/2001	7.8	8.2	9/18/2001	20	20
615	4/30/2001	7.9	7.7	4/30/2001	15	19	671	9/19/2001	7.8	8.2	9/19/2001	20	20

672	9/20/2001	7.6	8.3	9/20/2001	21	20
673	9/21/2001	7.5	8.3	9/21/2001	22	20
674	9/24/2001	7.2	8.3	9/24/2001	20	20
675	9/25/2001	7.4	8.3	9/25/2001	21	20
676	9/26/2001	7.3	8.3	9/26/2001	18	20
677	9/27/2001	7.4	8.3	9/27/2001	17	20
678	9/28/2001	7.2	8.3	9/28/2001	17	20
679	10/1/2001	7.9	8.3	10/1/2001	18	20
680	10/2/2001	7.6	8.3	10/2/2001	20	20
681	10/3/2001	7.7	8.3	10/3/2001	19	20
682	10/4/2001	7.5	8.3	10/4/2001	20	21
683	10/5/2001	7.7	8.3	10/5/2001	20	21
684	10/8/2001	7.8	8.3	10/8/2001	18	21
685	10/9/2001	7.6	8.3	10/9/2001	18	21
686	10/10/2001	7.8	8.4	10/10/2001	16	21
687	10/11/2001	7.6	8.4	10/11/2001	16	21
688	10/12/2001	7.5	8.4	10/12/2001	19	21
689	10/15/2001	7.6	8.4	10/15/2001	17	21
690	10/16/2001	7.2	8.4	10/16/2001	19	21
691	10/17/2001	7.5	8.4	10/17/2001	16	21
692	10/18/2001	7.2	8.5	10/18/2001	17	21
693	10/19/2001	7.0	8.5	10/19/2001	14	21
694	10/22/2001	7.1	8.5	10/22/2001	17	21
695	10/23/2001	6.9	8.5	10/23/2001	19	21
696	10/24/2001	6.9	8.5	10/24/2001	18	21
697	10/25/2001	7.1	8.5	10/25/2001	18	21
698	10/26/2001	7.0	8.5	10/26/2001	17	21
699	10/29/2001	7.5	8.5	10/29/2001	16	21
700	10/30/2001	7.1	8.5	10/30/2001	16	21
701	10/31/2001	7.0	8.5	10/31/2001	17	21
702	11/1/2001	7.1	8.5	11/1/2001	17	21
703	11/2/2001	7.2	8.6	11/2/2001	18	21
704	11/5/2001	7.2	8.6	11/5/2001	16	21
705	11/6/2001	7.3	8.6	11/6/2001	17	21
706	11/7/2001	7.4	8.6	11/7/2001	12	21
707	11/8/2001	7.1	8.6	11/8/2001	17	21
708	11/9/2001	7.1	8.6	11/9/2001	15	21
709	11/12/2001	7.3	8.6	11/12/2001	15	21
710	11/13/2001	7.0	8.6	11/13/2001	14	21
711	11/14/2001	6.8	8.6	11/14/2001	15	21
712	11/15/2001	6.7	8.6	11/15/2001	16	21
713	11/16/2001	7.1	8.6	11/16/2001	16	21
714	11/19/2001	7.3	8.6	11/19/2001	16	21
715	11/20/2001	6.9	8.6	11/20/2001	16	21
716	11/26/2001	7.0	8.6	11/26/2001	14	21
717	11/27/2001	6.6	8.7	11/27/2001	16	21
718	11/28/2001	7.1	8.7	11/28/2001	17	21
719	11/29/2001	7.4	8.7	11/29/2001	17	21
720	11/30/2001	7.3	8.7	11/30/2001	18	22
721	12/3/2001	7.4	8.7	12/3/2001	17	22
722	12/4/2001	7.5	8.7	12/4/2001	17	22
723	12/5/2001	7.3	8.7	12/5/2001	15	22
724	12/6/2001	7.3	8.7	12/6/2001	15	22
725	12/7/2001	7.1	8.7	12/7/2001	15	22
726	12/9/2001	7.1	8.7	12/9/2001	13	22
727	12/10/2001	7.5	8.8	12/10/2001	12	22

728	12/11/2001	7.0	8.8	12/11/2001	15	22
729	12/12/2001	7.3	8.8	12/12/2001	15	22
730	12/13/2001	6.9	8.8	12/13/2001	16	22
731	12/14/2001	6.8	8.8	12/14/2001	16	22
732	12/17/2001	6.9	8.8	12/17/2001	13	22
733	12/18/2001	6.8	8.8	12/18/2001	17	22
734	12/19/2001	6.9	8.8	12/19/2001	15	22
735	12/20/2001	6.9	8.8	12/20/2001	12	22
736	12/21/2001	6.6	8.8	12/21/2001	11	22
737	1/7/2002	6.9	8.8	1/7/2002	11	22
738	1/8/2002	6.8	8.9	1/8/2002	9	22
739	1/9/2002	6.8	8.9	1/9/2002	9	22
740	1/10/2002	8.7	8.9	1/10/2002	10	22
741	1/11/2002	6.8	8.9	1/11/2002	11	22
742	1/14/2002	7.1	8.9	1/14/2002	10	22
743	1/15/2002	7.2	8.9	1/15/2002	12	22
744	1/16/2002	6.9	8.9	1/16/2002	11	22
745	1/17/2002	6.9	8.9	1/17/2002	12	22
746	1/18/2002	6.7	8.9	1/18/2002	9	22
747	1/22/2002	7.0	8.9	1/22/2002	10	22
748	1/23/2002	7.0	9.0	1/23/2002	9	22
749	1/24/2002	7.0	9.0	1/24/2002	12	23
750	1/25/2002	6.8	9.0	1/25/2002	10	23
751	1/26/2002	7.1	9.0	1/26/2002	9	23
752	1/28/2002	7.1	9.0	1/28/2002	11	23
753	1/29/2002	7.0	9.0	1/29/2002	13	23
754	1/30/2002	7.2	9.6	1/30/2002	14	23
755	1/31/2002	6.8	9.8	1/31/2002	13	24

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38,07,11.0 -77,37,06.0

is the Search Point

Submit

Cancel

Search Point

☒ Change to "clicked" map point

☐ Fixed at 38,07,11.0 - 77,37,06.0

☒ Display Search Point is not in center at map center

Show Position Rings

☒ Yes ☐ No

1 mile and 1/4 mile at the Search Point

Show Search Area

☒ Yes ☐ No

2 Search distance miles radius

Search Point is at map center

Base Map Choices

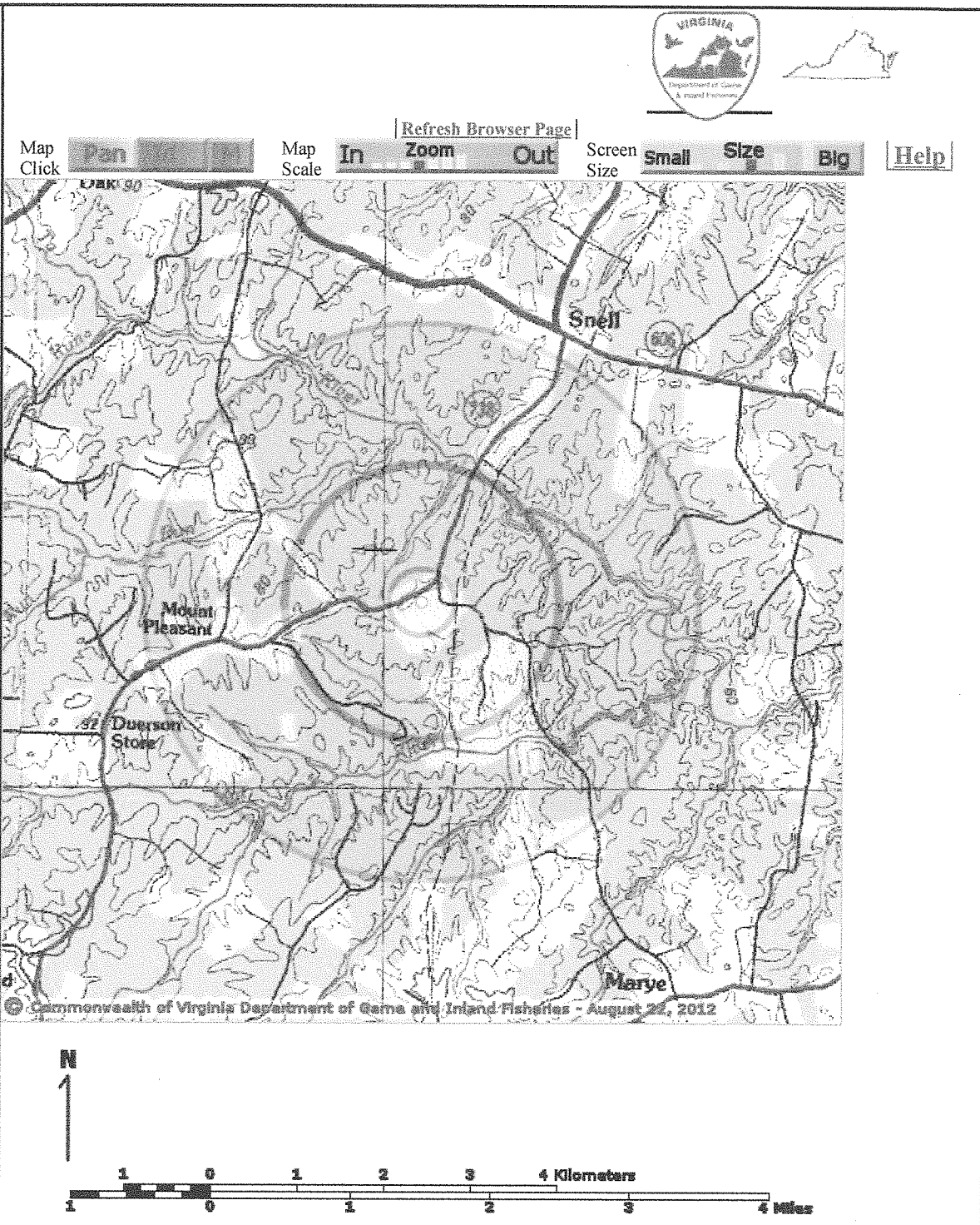
Topography

Map Overlay Choices

Current List: Position, Search

Map Overlay Legend

☒ Position Rings
1 mile and 1/4 mile at the Search Point

☒ 2 mile radius Search Area


Point of Search 38,07,11.0 -77,37,06.0

Map Location 38,07,11.0 -77,37,06.0

Select Coordinate System: ☒ Degrees, Minutes, Seconds Latitude - Longitude☐ Decimal Degrees Latitude - Longitude☐ Meters UTM NAD83 East North Zone☐ Meters UTM NAD27 East North ZoneBase Map source: USGS 1:100,000 topographic maps (see [Microsoft terraserver-usa.com](http://Microsoft.terraserver-usa.com) for details)

Map projection is UTM Zone 18 NAD 1983 with left 265674 and top 4227137. Pixel size is 16 meters. Coordinates displayed are Degrees, Minutes, Seconds North and West. Map is currently displayed as 600 columns by 600 rows for a total of 360000 pixels. The map display represents 9600 meters east to west by 9600 meters north to south for a total of 92.1 square kilometers. The map display represents 31501 feet east to west by 31501 feet north to south for a total of 35.5 square miles.

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map assembled 2012-08-22 16:46:52 (qa/qc June 12, 2012 14:14 - tn=419319 dist=3218 I)

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VaFWIS Initial Project Assessment Report

Compiled on 8/22/2012, 4:50:53 PM

[Help](#)

Known or likely to occur within a **2 mile radius around point 38.119722222222 77.618333333333**
in **177 Spotsylvania County, VA**

[View Map of Site Location](#)

383 Known or Likely Species ordered by Status Concern for Conservation
(displaying first 20) (14 species with Status* or Tier I** or Tier II**)

<u>BOVA Code</u>	<u>Status*</u>	<u>Tier**</u>	<u>Common Name</u>	<u>Scientific Name</u>	<u>Confirmed</u>	<u>Database(s)</u>
060003	FESE	II	<u>Wedgemussel, dwarf</u>	Alasmidonta heterodon		Habitat
040129	ST	I	<u>Sandpiper, upland</u>	Bartramia longicauda		BOVA
040293	ST	I	<u>Shrike, loggerhead</u>	Lanius ludovicianus		BOVA
040093	FSST	II	<u>Eagle, bald</u>	Haliaeetus leucocephalus		BOVA
040292	ST		<u>Shrike, migrant loggerhead</u>	Lanius ludovicianus migrans		BOVA
100248	FS	I	<u>Fritillary, regal</u>	Speyeria idalia idalia		BOVA
030063	CC	III	<u>Turtle, spotted</u>	Clemmys guttata		BOVA
010077		I	<u>Shiner, bridle</u>	Notropis bifrenatus	Yes	BOVA,Habitat,SppObs
040225		I	<u>Sapsucker, yellow-bellied</u>	Sphyrapicus varius		BOVA
040319		I	<u>Warbler, black-throated green</u>	Dendroica virens		BOVA
040052		II	<u>Duck, American black</u>	Anas rubripes		BOVA
040105		II	<u>Rail, king</u>	Rallus elegans		BOVA
040320		II	<u>Warbler, cerulean</u>	Dendroica cerulea		BOVA
040266		II	<u>Wren, winter</u>	Troglodytes troglodytes		BOVA
030068		III	<u>Turtle, eastern box</u>	Terrapene carolina carolina		BOVA
040094		III	<u>Harrier, northern</u>	Circus cyaneus		BOVA
040034		III	<u>Heron, tricolored</u>	Egretta tricolor		BOVA
040036		III	<u>Night-heron, yellow-crowned</u>	Nyctanassa violacea violacea		BOVA
040204		III	<u>Owl, barn</u>	Tyto alba pratincola		BOVA
040181		III	<u>Tern, common</u>	Sterna hirundo		BOVA

To view **All 383 species** [View 383](#)

* FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FC=Federal Candidate; FS=Federal Species of Concern; CC=Collection Concern

8/28/2012 12:58:35 PM

Facility = Berkeley Elementary School WWTP
Chemical = Ammonia
Chronic averaging period = 30
WLAa = 14.9
WLAc =
Q.L. = .2
samples/mo. = 1
samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 9
Variance = 29.16
C.V. = 0.6
97th percentile daily values = 21.9007
97th percentile 4 day average = 14.9741
97th percentile 30 day average = 10.8544
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity
Maximum Daily Limit = 14.9
Average Weekly limit = 14.9
Average Monthly LLimit = 14.9

The data are: Units of Measurement is mg/L.



VA 0061301

COMMONWEALTH of VIRGINIA

E. Anne Peterson, M.D., M.P.H.
COMMISSIONER

Department of Health
Office of Water Programs

ENVIRONMENTAL ENGINEERING FIELD OFFICE
400 S. MAIN ST. - 2ND FLOOR
CULPEPER, VA 22701
PHONE: 540-829-7340
FAX: 540-829-7337

MEMORANDUM

DATE: SEP 28 2000

TO: Dennis Treacy, Director
Department of Environmental Quality, Water Regional Office, Woodbridge

FROM: *RV* Robert J. VanLier, P.E. Engineering Field Representative
State Health Department, Division of Wastewater Engineering

SUBJECT: Spotsylvania County - Sewerage - Berkeley Elementary School

Please find enclosed the Certificate to Operate (CTO) for the above mentioned facility. Please process in our usual fashion.

PLEASE STAMP THIS PAGE ONLY

RECEIVED

OCT 0 2000

Northern Va. Region
Dept. of Env. Quality



COMMONWEALTH of VIRGINIA

E. Anne Peterson, M.D., M.P.H.
COMMISSIONER

Department of Health
Office of Water Programs

ENVIRONMENTAL ENGINEERING FIELD OFFICE
400 S. MAIN ST. - 2ND FLOOR
CULPEPER, VA 22701
PHONE: 540-829-7340
FAX: 540-829-7337

October 4, 2000

SUBJECT: Spotsylvania County
Sewerage - Berkeley Elementary School

Mr. James A. Meyers
Spotsylvania County School Board
6717 Smith Station Road
Spotsylvania, VA 22553

Dear Mr. Meyers:

Enclosed is the Certificate to Operate (CTO) for the Berkeley Elementary School.

This action is in accordance with Section 2.06 of the Virginia *Sewerage Regulations*.

If you have any questions regarding the CTO, please feel free to contact this office.

Sincerely,

Robert J. VanLier, P.E.
Engineering Field Representative

RJV/jdc
CC: DEQ - Water Regional Office, Woodbridge
Spotsylvania County Health Department
OWP - Central
o:\jc\dist16\s\berkeleyCTOltr



COMMONWEALTH of VIRGINIA

E. Anne Peterson, M.D., M.P.H.
COMMISSIONER

Department of Health
Office of Water Programs

ENVIRONMENTAL ENGINEERING FIELD OFFICE
400 S. MAIN ST. - 2ND FLOOR
CULPEPER, VA 22701
PHONE: 540-829-7340
FAX: 540-829-7337

CERTIFICATE TO OPERATE

Owner: Spotsylvania County School Board

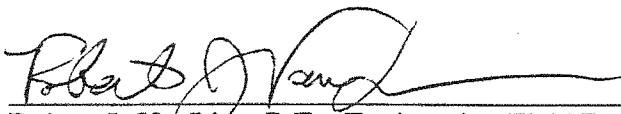
Facility/System Name: Berkeley Elementary School STW

VPDES Permit Number: VA0061301

Description of the Facility/System: This project involves the installation of an extended aeration basin, clarifier, digester, and blowers. The septic tank is to be retained. The existing sand filters are to be removed from the treatment process. No change in flow is involved.


Authorization to Operate: By letter dated September 28, 2000, David J. Saunders, P.E. indicated that the treatment works has been installed as per the approved plans and specifications for this facility. A CTO inspection was performed by VDH. The owner is authorized to operate these facilities with the condition that an operation and maintenance manual will be submitted to the VDH for approval.

CONCURRENCE


Robert J. VanLier, P.E., Engineering Field Representative
State Department of Health

9/28/00 Date

ISSUANCE


for Mr. Dennis Treacy, Director
Department of Environmental Quality

10/4/00 Date

RJV/jdc
o:\jc\dist16\s\berkeleyCTO



VA 0061301

COMMONWEALTH of VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY

James S. Gilmore, III
Governor

John Paul Woodley, Jr.
Secretary of Natural Resources

Northern Virginia Regional Office
13901 Crown Court
Woodbridge, VA 22193-1453
(703) 583-3800 fax (703) 583-3801
<http://www.deq.state.va.us>

Dennis H. Treacy
Director

Gregory L. Clayton
Regional Director

April 29, 1999

Dr. James A. Meyer, Ed.D.
Assistant Superintendent of Schools
Spotsylvania County School Board
7565 Courthouse Drive
Spotsylvania, VA 22553

RE: Plans and Specifications for the Berkeley Elementary and J.J. Wright Middle Schools Wastewater Treatment Facilities

Dear Dr. Meyer:

The plans and specifications for the above-referenced project are approved by the Department of Environmental Quality. This action is in accordance with a letter report from the Virginia Department of Health conditionally approving this project. A copy is enclosed for your information. You are expected to comply with the condition that the Operation and Maintenance Manual, Sludge Management Plan, and the Sand Filter Closure Plan be submitted to the Department of Health and the Department of Environmental Quality for review and approval prior to the issuance of a final Certificate to Operate.


This document constitutes your Certificate to Construct as required by Section 2.04.04 of the Virginia *Sewerage Regulations*.

As the owner of these facilities you will be required to comply with the following sections of the Virginia *Sewerage Regulations*: Section 2.05 (Statement Required Upon Completion of Construction) and Section 2.06 (Issuance of the Certificate to Operate).

The Department of Environmental Quality approval does not relieve the owner of the responsibility of operating the facility in a consistent manner to meet the facility performance requirements or the responsibility for the correction of design and/or operation deficiencies. Nor does this approval relieve the owner from meeting all other applicable laws and regulations.

If you have any questions, or if in the next thirty (30) days you or your engineers would like to pick up and retain our copy of the approved plans and specifications, please contact Anna Tuthill at (703) 583-3837.

Sincerely,


Dennis H. Treacy
Director

Enclosures

cc: E.R. Sutherland, Clifford and Associates
Doug Crooks, Superintendent of Wastewater, Spotsylvania County
Cal Sawyer, P.E., VDH--Division of Wastewater Engineering
J. S. Desai, P.E., VDH-Culpeper
File *An Agency of the Natural Resources Secretariat*



RECEIVED
APR 8 1999

COMMONWEALTH of VIRGINIA

Northern V.A. Region
Dept. of Env. Quality

Department of Health

P O BOX 2448

RICHMOND, VA 23218

TDD 1-800-828-1120

APR 07 1999

SUBJECT: Spotsylvania County
Sewerage: Spotsylvania County Schools
Berkeley Elementary and
J. J. Wright Middle Schools WTF

Department of Environmental Quality
Water Regional Office
13901 Crown Court
Woodbridge, Virginia 22193

Attention: Mr. Gregory L. Clayton
Regional Director

Dear Mr. Clayton:

The Preliminary Engineering Report (PER), plans and specifications, for the upgrade (nitrification) of the Wastewater Treatment Facilities for the Berkeley Elementary and J. J. Wright Middle Schools, Spotsylvania County School Board as prepared by Clifford and Associates have been received by this Department. The PER includes pages 1 through 16 entitled Wastewater Treatment Upgrade and is dated June 1998. The plans include sheets 1 through 6 entitled Spotsylvania County Public Schools, Wastewater Treatment Facilities Improvement and are dated October 1998.

This project has been designed for average flows of .0075 and .0053 MGD for J. J. Wright and Berkeley schools respectively or equivalent school populations of 553 and 362 students.

The proposed facilities have been designed to comply with the existing effluent limits of 24 mg/l BOD, 24 mg/l TSS and new, May 30, 2001, standards for ammonia for Berkeley of 1.7 mg/l and for J. J. Wright of 1.1 mg/l. The project consists of adding extended aeration systems for nitrification and removal of the existing sand filters.

Although the design flow at the J. J. Wright School was projected as 7,500 gpd, the PER lists the permitted flow at 15,000 gpd which should be adjusted accordingly to reflect the actual design capacity.

SUBJECT: Spotsylvania County
Sewerage: Spotsylvania County Schools
Berkeley Elementary and
J. J. Wright Middle Schools WTF

The design consultant also investigated the alternative of pumping to a POTW; but, because of cost, selected the on-site treatment and discharge option.

The evaluation review of these plans and specifications has been confined to technical requirements and design criteria as stipulated in the Commonwealth of Virginia *Sewerage Regulations*. The Operation and Maintenance Manual should include a narrative description of the processes, analyses and calculations necessary to monitor performance, the expected ranges of results, and recommendations for adjustments if those expectations are not met. This guidance is important because the effluent from the septic tank is considered to be equivalent to that of a primary clarifier. The relative concentrations of COD and ammonia are marginally suited for nitrification.

In accordance with the State Water Control Law, Code of Virginia 1950, as amended Title 62.1, Chapter 3.1, Article 4, Section 62.1-44.1.9, Paragraph 3, this letter report is to advise that the previously mentioned PER, plans and specifications are technically adequate and are recommended for approval with the condition that the Operation and Maintenance Manual, Sludge Management Plan, and the Sand Filter Closure Plan be submitted to the Department of Health and Department of Environmental Quality for review and approval prior to the issuance of a final Certificate to Operate.

Issuance of a construction permit or any further action or decision is a matter for your office.

The Department will forward one copy of the PER, plans and specifications with State Health Department stickers to the Department of Environmental Quality's Water Regional Office in Woodbridge and one copy to the owner.

Notification of the Department of Environmental Quality's action should be transmitted to Dr. James Meyer, Spotsylvania County Schools, 7565 Courthouse Drive, Spotsylvania, Virginia 22553; Mr. E. R. Sutherland, Clifford and Associates, 150 C. Olde Greenwich Drive, Fredericksburg, Virginia 22401-4098; the Local Building Code Official; Mr. J. S. Desai, Virginia Department of Health, Culpeper Field Office, 400 Main Street, Culpeper, Virginia 22701; and this Office.

Department of Environmental Quality
Page Three

SUBJECT: Spotsylvania County
Sewerage: Spotsylvania County Schools
Berkeley Elementary and
J. J. Wright Middle Schools WTF

Enclosed is a copy of the letters of transmittal dated September 15, 1998 and November 5, 1998.

By direction of the Acting State Health Commissioner.

Sincerely,

A handwritten signature in dark ink, appearing to read "C. M. Sawyer", with a stylized flourish at the end.

C. M. Sawyer, P.E., Director
Division of Wastewater Engineering

c: Dr. James Meyer-Spotsylvania County Schools
Mr. E. R. Sutherland-Clifford and Associates
Mr. J. S. Desai-Culpeper Field Office
Spotsylvania County Health Department

Facility = Berkeley ES
Chemical = Ammonia as N
Chronic averaging period = 30
WLAa = 2.92
WLAc =
Q.L. = 0.2
samples/mo. = 1
samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 10
Variance = 36
C.V. = 0.6
97th percentile daily values = 24.3341
97th percentile 4 day average = 16.6379
97th percentile 30 day average = 12.0605
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity
Maximum Daily Limit = 2.92
Average Weekly limit = 2.92
Average Monthly Limit = 2.92

The data are:

10

FACILITY: Berkeley Elementary School
VPDES #: VA0060301

Ammonia Calculation - Acute Ammonia Criteria for Freshwater

TIER INFORMATION: 1

DATA ENTRY:-> Temperature 20 pH 8.30

FT
FT=10^{^((.03)(20-T))} = 1.00000000

FPH
FPH=1 if 8.0<=pH<=9.0 = 1.00000000
FPH=((1+10^{^(7.4-pH))})/1.25 if 6.5<=pH<8.0 = NA
FPH=1

Acute Criteria Concentration= .52/FT/FPH/2 = 0.26000000

Conversion from un-ionized to Total Ammonia can be calculated by using the following formulas:

Total Acute Ammonia Criteria = Calculated un-ionized ammonia criteria divided by fraction of un-ionized Ammonia

Where: Fraction of un-ionized ammonia = 1/(10^{^(pKa-pH) + 1}) Fraction= 0.0734374

where: pKa = 0.09018 + (2729.92/273.2 + temperature 'C.) pKa = 9.4009576

Total Acute Ammonia Criteria = Calculated un-ionized Ammonia Criteria divided by fraction of un-ionized Ammonia

Total Acute Ammonia Criteria = 0.26000000 / 0.073437376 = Total Ammonia = 3.5404315 mg/l

Total Ammonia is then converted to Ammonia-Nitrogen.

TOTAL ACUTE N-NH3 3.5404315 X .824 = 2.9173156 MG/L = 2.92

Ammonia Calculation - Chronic Ammonia Criteria for Freshwater

TIER INFORMATION: 1

DATA ENTRY:-> Temperature 20 pH 8.30

FT
FT=10^{^((.03)(20-T))} = 1.00000000

FPH
FPH=1 if 8.0<=pH<=9.0 = 1.00000000
FPH=((1+10^{^(7.4-pH))})/1.25 if 6.5<=pH<8.0 = NA
FPH=1

Ratio
Ratio = 13.5 if 7.7<=pH<=9.0 = 13.5
Ratio = 20.25 x (10^{^(7.7-pH))}/(1+(10^{^(7.4-pH))}) if 6.5<=pH<7.7 = NA
Ratio = 13.5

Chronic Criteria Concentration= .8/FT/FPH/RATIO = 0.0592593

Conversion from un-ionized to Total Ammonia can be calculated by using the following formulas:

Total Chronic Ammonia Criteria = Calculated un-ionized ammonia criteria divided by fraction of un-ionized Ammonia

Where: Fraction of un-ionized ammonia = $1/(10^{(pKa-pH)} + 1)$

Fraction = 0.0734374

where: pKa = $0.09018 + (2729.92/273.2 + \text{temperature } ^\circ\text{C})$

pKa = 9.4009576

Total Chronic Ammonia Criteria = Calculated un-ionized Ammonia Criteria divided by fraction of un-ionized Ammonia

Total Chronic Ammonia Criteria = 0.0592593 / 0.0734374 = Total Ammonia = 0.806935956 mg/l

Total Ammonia is then converted to Ammonia-Nitrogen.

TOTAL CHRONIC N-NH3 0.8069360 X .824 = 0.6649152 MG/L 0.66

Revised 12/03/97: (i:\wdb\1\common\permits\model\newamm)

Facility = Berkeley ES
Chemical = Total Residual Chlorine
Chronic averaging period = 4
WLAa = 0.019
WLAc =
Q.L. = 0.1
samples/mo. = 28
samples/wk. = 7

Summary of Statistics:

observations = 1
Expected Value = 20
Variance = 144
C.V. = 0.6
97th percentile daily values = 48.6683
97th percentile 4 day average = 33.2758
97th percentile 30 day average = 24.1210
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity
Maximum Daily Limit = 0.019
Average Weekly limit = 1.16034369282885E-02
Average Monthly Limit = 9.47327018453872E-03

The data are:

ACE

STREAM ASSIMILATION ANALYSIS

Stream: Mat RiverDate: 1-5-77Discharge: Berkley School STOTSYLVANIADrainage Area: 10.5 mi²
Critical Discharge: .01 mgd

Discharge Conditions		NO CHANGE		
		$Q = .00535 \text{ mgd}$ $BOD_5 = 24 \text{ mg/l}$ $D.O. = 5.5 \text{ mg/l}$		
Input: Background & "Discharge" Data	Stream temperature	30°	30	30
	Saturation D.O.	7.6	7.6	7.6
	D.O. Discharge	5.5	6.8	6.8
	K ₁ (carbonaceous)	0.2	.14	.12
	K _n (nitrogenous)	0	0	0
	K ₂ (reaeration)	1.0	1	1
	Flow, mgd (discharge)	0.00535	.01	.00
	BOD ₅ (discharge)	24	3	3
	NOD _u (discharge)	0	0	0
Input: "Stream" Data	Flow, mgd (stream)	0	.00535	.015
	BOD ₅ (stream)	0	23.6	8.3
	NOD _u (stream)	0	0	0
	Length of segment (mi)	1	.5	2.0
	Velocity of stream (fps)	1	1	1
	D.O. (allowable)	5.0	5.0	5.0
	D.O. (stream)	6.8	5.24	6.3
Output: Data @ either critical point or end of segment (see Note)	Δ D.O. from allowable (Red indicates violation)	.24	1.24	1.4
	Flow (combined)	.00535	.01535	.019
	BOD ₅ decay @ t	23.6	8.3	5.
	NOD _u decay @ t	0	0	0
	time, days	.06	.03	.0
	D.O. @ t ("A" indicates Critical D.O.)	5.24	6.3	6.4

#1 - Dry Ditch condition (for 1 mile)

#2 - Mix with Mat River - travel to next trib (.5 mi)

#3 - Travel to Ta River, add stretch flows & Trib (A = 4 mi², Q = .004) (2.0 mi)

Note: At the end of each segment, if critical D.O. has not been reached, the next stream segment should be analyzed. The parameter values determined @ time = t become the new "stream" data and new flows introduced to the stream (eg: tributaries, STP discharges, stretch flows) become the new "discharge" data. [K₁, K_n and K₂ must be adjusted as necessary]

by: Ed. Miller
Roland Blier

Attachment 13

Public Notice – Environmental Permit

PURPOSE OF NOTICE: To seek public comment on a draft permit from the Department of Environmental Quality that will allow the release of treated wastewater into a water body in Spotsylvania County, Virginia.

PUBLIC COMMENT PERIOD: XXX, 2012 to 5:00 p.m. on XXX, 2012

PERMIT NAME: Virginia Pollutant Discharge Elimination System Permit – Wastewater issued by DEQ, under the authority of the State Water Control Board

APPLICANT NAME, ADDRESS AND PERMIT NUMBER: Spotsylvania County School Board, 8020 River Stone Drive, Fredericksburg, VA 22407, VA0061301

PROJECT DESCRIPTION: Spotsylvania County School Board has applied for a reissuance of a permit for the public Berkeley Elementary School. The applicant proposes to release treated sewage wastewaters from public school at a rate of 0.0053 million gallons per day into a water body. The sludge will be disposed by hauling it to the Massaponax Wastewater Treatment Plant for final disposal. The facility proposes to release treated sewage in the unnamed tributary to Mat River Spotsylvania County in the York River watershed. A watershed is the land area drained by a river and its incoming streams. The permit will limit the following pollutants to amounts that protect water quality: pH, BOD₅, Total Residual Chlorine, Total Suspended Solids, Ammonia, and Dissolved Oxygen.

HOW TO COMMENT AND/OR REQUEST A PUBLIC HEARING: DEQ accepts comments and requests for public hearing by e-mail, fax or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all persons represented by the commenter/requester. A request for public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requestor, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. A public hearing may be held, including another comment period, if public response is significant, based on individual requests for a public hearing, and there are substantial, disputed issues relevant to the permit.

CONTACT FOR PUBLIC COMMENTS, DOCUMENT REQUESTS AND ADDITIONAL INFORMATION: The public may review the documents at the DEQ-Northern Regional Office by appointment, or may request electronic copies of the draft permit and fact sheet.

Name: Joan C. Crowther

Address: DEQ-Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193

Phone: (703) 583-3925 E-mail: joan.crowther@deq.virginia.gov Fax: (703) 583-3821

**State "Transmittal Checklist" to Assist in Targeting
Municipal and Industrial Individual NPDES Draft Permits for Review**

Part I. State Draft Permit Submission Checklist

In accordance with the MOA established between the Commonwealth of Virginia and the United States Environmental Protection Agency, Region III, the Commonwealth submits the following draft National Pollutant Discharge Elimination System (NPDES) permit for Agency review and concurrence.

Facility Name:	<u>Berkeley Elementary School</u>
NPDES Permit Number:	<u>VA0061301</u>
Permit Writer Name:	<u>Joan C. Crowther</u>
Date:	<u>August 31, 2012</u>

Major []

Minor [X]

Industrial []

Municipal [X]

I.A. Draft Permit Package Submittal Includes:

	Yes	No	N/A
1. Permit Application?	X		
2. Complete Draft Permit (for renewal or first time permit – entire permit, including boilerplate information)?	X		
3. Copy of Public Notice?	X		
4. Complete Fact Sheet?	X		
5. A Priority Pollutant Screening to determine parameters of concern?	X		
6. A Reasonable Potential analysis showing calculated WQBELs?	X		
7. Dissolved Oxygen calculations?	X		
8. Whole Effluent Toxicity Test summary and analysis?			X
9. Permit Rating Sheet for new or modified industrial facilities?			X

I.B. Permit/Facility Characteristics

	Yes	No	N/A
1. Is this a new, or currently unpermitted facility?		X	
2. Are all permissible outfalls (including combined sewer overflow points, non-process water and storm water) from the facility properly identified and authorized in the permit?	X		
3. Does the fact sheet or permit contain a description of the wastewater treatment process?	X		
4. Does the review of PCS/DMR data for at least the last 3 years indicate significant non-compliance with the existing permit?	X		
5. Has there been any change in streamflow characteristics since the last permit was developed?		X	
6. Does the permit allow the discharge of new or increased loadings of any pollutants?		X	
7. Does the fact sheet or permit provide a description of the receiving water body(s) to which the facility discharges, including information on low/critical flow conditions and designated/existing uses?	X		
8. Does the facility discharge to a 303(d) listed water?		X	
a. Has a TMDL been developed and approved by EPA for the impaired water?			X
b. Does the record indicate that the TMDL development is on the State priority list and will most likely be developed within the life of the permit?			X
c. Does the facility discharge a pollutant of concern identified in the TMDL or 303(d) listed water?			X
9. Have any limits been removed, or are any limits less stringent, than those in the current permit?		X	
10. Does the permit authorize discharges of storm water?		X	

I.B. Permit/Facility Characteristics – cont.	Yes	No	N/A
11. Has the facility substantially enlarged or altered its operation or substantially increased its flow or production?		X	
12. Are there any production-based, technology-based effluent limits in the permit?		X	
13. Do any water quality-based effluent limit calculations differ from the State's standard policies or procedures?		X	
14. Are any WQBELs based on an interpretation of narrative criteria?		X	
15. Does the permit incorporate any variances or other exceptions to the State's standards or regulations?		X	
16. Does the permit contain a compliance schedule for any limit or condition?		X	
17. Is there a potential impact to endangered/threatened species or their habitat by the facility's discharge(s)?		X	
18. Have impacts from the discharge(s) at downstream potable water supplies been evaluated?	X		
19. Is there any indication that there is significant public interest in the permit action proposed for this facility?		X	
20. Have previous permit, application, and fact sheet been examined?	X		

Part II. NPDES Draft Permit Checklist

Region III NPDES Permit Quality Checklist – for POTWs (To be completed and included in the record only for POTWs)

II.A. Permit Cover Page/Administration	Yes	No	N/A
1. Does the fact sheet or permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)?	X		
2. Does the permit contain specific authorization-to-discharge information (from where to where, by whom)?	X		

II.B. Effluent Limits – General Elements	Yes	No	N/A
1. Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)?	X		
2. Does the fact sheet discuss whether “antibacksliding” provisions were met for any limits that are less stringent than those in the previous NPDES permit?	X		

II.C. Technology-Based Effluent Limits (POTWs)	Yes	No	N/A
1. Does the permit contain numeric limits for <u>ALL</u> of the following: BOD (or alternative, e.g., CBOD, COD, TOC), TSS, and pH?	X		
2. Does the permit require at least 85% removal for BOD (or BOD alternative) and TSS (or 65% for equivalent to secondary) consistent with 40 CFR Part 133?	X		
a. If no, does the record indicate that application of WQBELs, or some other means, results in more stringent requirements than 85% removal or that an exception consistent with 40 CFR 133.103 has been approved?			X
3. Are technology-based permit limits expressed in the appropriate units of measure (e.g., concentration, mass, SU)?	X		
4. Are permit limits for BOD and TSS expressed in terms of both long term (e.g., average monthly) and short term (e.g., average weekly) limits?	X		
5. Are any concentration limitations in the permit less stringent than the secondary treatment requirements (30 mg/l BOD5 and TSS for a 30-day average and 45 mg/l BOD5 and TSS for a 7-day average)?		X	
a. If yes, does the record provide a justification (e.g., waste stabilization pond, trickling filter, etc.) for the alternate limitations?			X

II.D. Water Quality-Based Effluent Limits	Yes	No	N/A
1. Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality?	X		
2. Does the fact sheet indicate that any WQBELs were derived from a completed and EPA approved TMDL?			X
3. Does the fact sheet provide effluent characteristics for each outfall?	X		
4. Does the fact sheet document that a “reasonable potential” evaluation was performed?	X		
a. If yes, does the fact sheet indicate that the “reasonable potential” evaluation was performed in accordance with the State’s approved procedures?	X		
b. Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone?	X		
c. Does the fact sheet present WLA calculation procedures for all pollutants that were found to have “reasonable potential”?	X		
d. Does the fact sheet indicate that the “reasonable potential” and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations)?		X	
e. Does the permit contain numeric effluent limits for all pollutants for which “reasonable potential” was determined?	X		

II.D. Water Quality-Based Effluent Limits – cont.	Yes	No	N/A
5. Are all final WQBELs in the permit consistent with the justification and/or documentation provided in the fact sheet?	X		
6. For all final WQBELs, are BOTH long-term AND short-term effluent limits established?	X		
7. Are WQBELs expressed in the permit using appropriate units of measure (e.g., mass, concentration)?	X		
8. Does the record indicate that an “antidegradation” review was performed in accordance with the State’s approved antidegradation policy?	X		

II.E. Monitoring and Reporting Requirements	Yes	No	N/A
1. Does the permit require at least annual monitoring for all limited parameters and other monitoring as required by State and Federal regulations?	X		
a. If no, does the fact sheet indicate that the facility applied for and was granted a monitoring waiver, AND, does the permit specifically incorporate this waiver?			
2. Does the permit identify the physical location where monitoring is to be performed for each outfall?	X		
3. Does the permit require at least annual influent monitoring for BOD (or BOD alternative) and TSS to assess compliance with applicable percent removal requirements?		X	
4. Does the permit require testing for Whole Effluent Toxicity?		X	

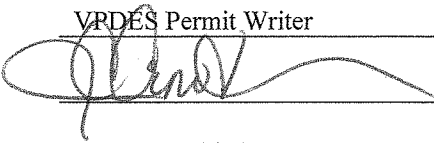
II.F. Special Conditions	Yes	No	N/A
1. Does the permit include appropriate biosolids use/disposal requirements?	X		
2. Does the permit include appropriate storm water program requirements?			X

II.F. Special Conditions – cont.	Yes	No	N/A
3. If the permit contains compliance schedule(s), are they consistent with statutory and regulatory deadlines and requirements?			X
4. Are other special conditions (e.g., ambient sampling, mixing studies, TIE/TRE, BMPs, special studies) consistent with CWA and NPDES regulations?	X		
5. Does the permit allow/authorize discharge of sanitary sewage from points other than the POTW outfall(s) or CSO outfalls [i.e., Sanitary Sewer Overflows (SSOs) or treatment plant bypasses]?		X	
6. Does the permit authorize discharges from Combined Sewer Overflows (CSOs)?		X	
a. Does the permit require implementation of the “Nine Minimum Controls”?			X
b. Does the permit require development and implementation of a “Long Term Control Plan”?			X
c. Does the permit require monitoring and reporting for CSO events?			X
7. Does the permit include appropriate Pretreatment Program requirements?		X	

II.G. Standard Conditions		Yes	No	N/A
1. Does the permit contain all 40 CFR 122.41 standard conditions or the State equivalent (or more stringent) conditions?		X		
List of Standard Conditions – 40 CFR 122.41				
Duty to comply	Property rights	Reporting Requirements		
Duty to reapply	Duty to provide information	Planned change		
Need to halt or reduce activity	Inspections and entry	Anticipated noncompliance		
not a defense	Monitoring and records	Transfers		
Duty to mitigate	Signatory requirement	Monitoring reports		
Proper O & M	Bypass	Compliance schedules		
Permit actions	Upset	24-Hour reporting		
		Other non-compliance		
2. Does the permit contain the additional standard condition (or the State equivalent or more stringent conditions) for POTWs regarding notification of new introduction of pollutants and new industrial users [40 CFR 122.42(b)]?			X	

Part III. Signature Page

Based on a review of the data and other information submitted by the permit applicant, and the draft permit and other administrative records generated by the Department/Division and/or made available to the Department/Division, the information provided on this checklist is accurate and complete, to the best of my knowledge.

Name	<u>Joan C. Crowther</u>
Title	<u>VPDES Permit Writer</u>
Signature	 <u></u>
Date	<u>August 31, 2012</u>